D.T.E. Code - 3487

IDEAL INSTITUTE OF PHARMACY

EMPOWERING INDIA THROUGH KNOWLEDGE

Affiliated by the Mumbai University & Approved by AICTE New Delhi, DTE Maharastra.

3.3.2. Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

A Unit Of Ideal Foundation
At Village - Posheri, Taluka- Wada, District- Palghar, Maharashtra
Contact: +91-7678002000, E-mail : idealpharmacy3487@gmail.com , website: http://Idealpharmacywada.com

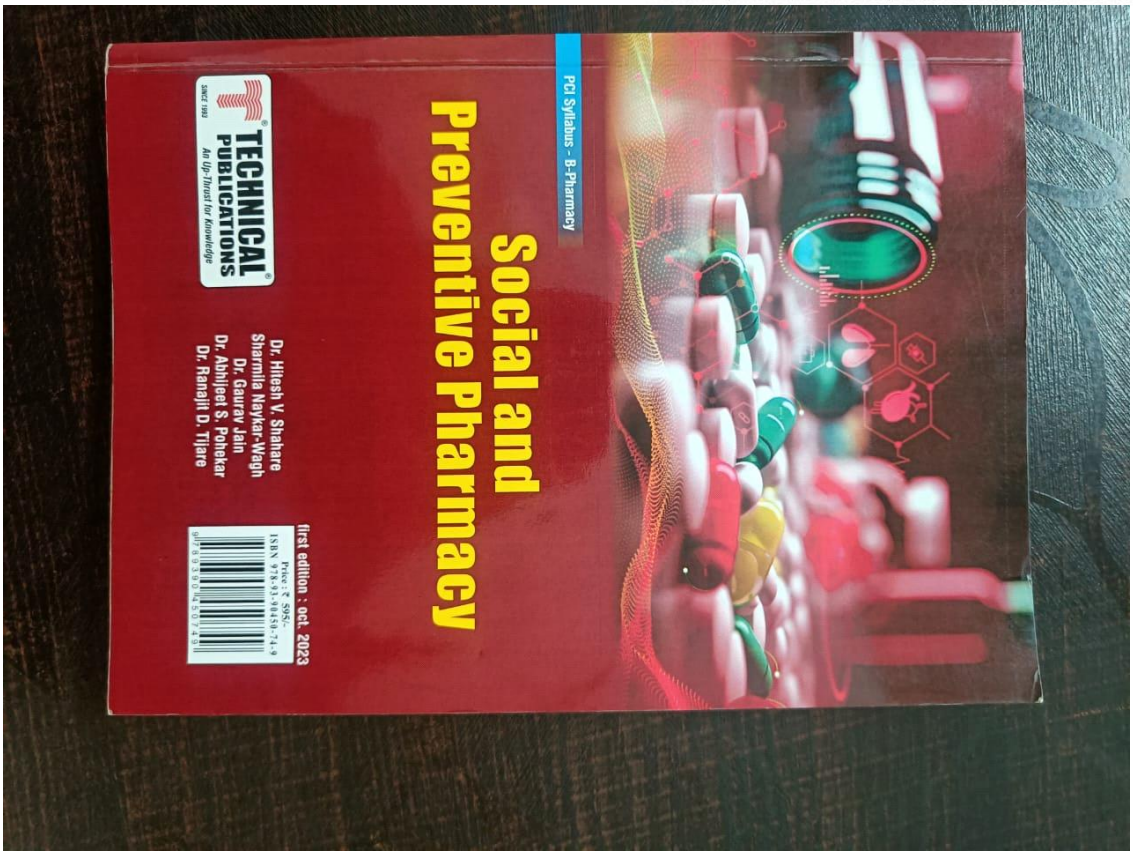
3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five year

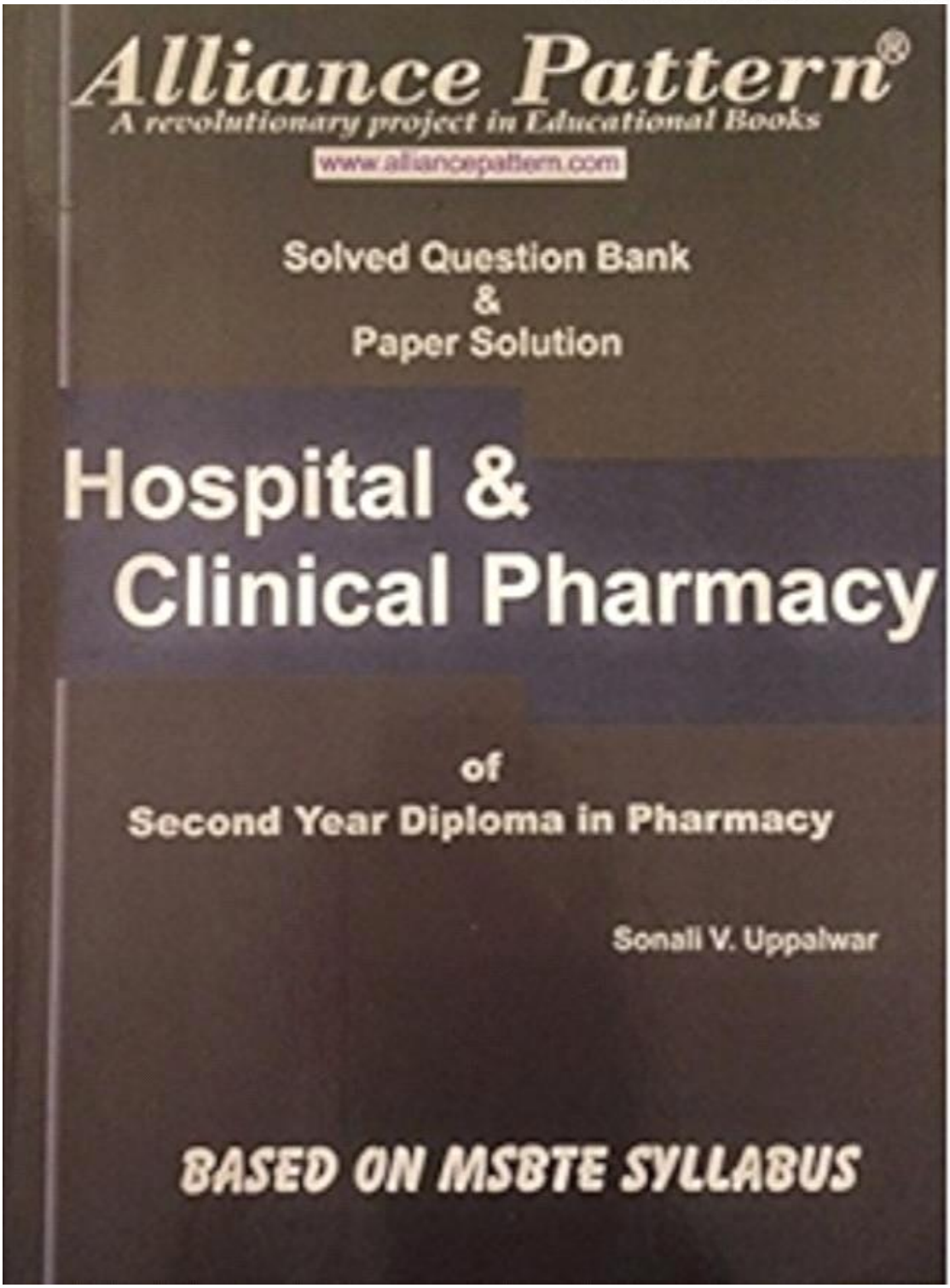
Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Calendar Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
1	**Mrs Sharmila naykar-Wagh**	**Social And Preventive Pharmacy**	**–**	**–**	**–**	**–**	**2023**	**9789390450749**	**Ideal Intitute Of Pharmacy, Posheri, Wada, Palghar**	**Technical publications**
2	**Dr Sonali Uppalwar**	**National conference on current trends in drug discovery and devlopment**	**National conference on current trends in drug discovery and devlopment**	**National conference on current trends in drug discovery and devlopment**	**National conference on current trends in drug discovery and devlopment**	**National**	**2023**	**978-81-957406-9-7**	**Ideal Intitute Of Pharmacy, Posheri, Wada, Palghar**	**Commercial Publications**
3	Dr Sonali Uppalwar	**National conference on**	Imfinzi (Durvalumab) after chemoradiotherapy in	**National**	National	National	2023	**978-81-957406-9-7**	**Ideal Intitute Of**	Commercial
4	Dr Sonali Uppalwar	**National conference on**	Donanemab In Early Alzheimer's Disease	**National**	National	National	2023	**978-81-957406-9-8**	**Ideal Intitute Of**	Commercial
5	Dr Sonali Uppalwar	**National conference on**	Digoxin : A Time Tested cardiac Medication	**National**	National	National	2023	**978-81-957406-9-9**	**Ideal Intitute Of**	Commercial
6	Dr Sonali Uppalwar	**National conference on**	EXPLORING The MEDICINAL POTENTIAL OF	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
7	Dr Sonali Uppalwar	**National conference on**	Bhamurda (Blumea lacera)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
8	Dr Sonali Uppalwar	**National conference on**	Black Turmeric	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
9	Dr Sonali Uppalwar	**National conference on**	Catharanthus roseus	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
10	Dr Sonali Uppalwar	**National conference on**	Medicinal and Beneficial Health Applications of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
11	Dr Sonali Uppalwar	**National conference on**	Black Turmeric	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
12	Dr Sonali Uppalwar	**National conference on**	bhamurda (blumea lacera)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
13	Mrs Sharmila naykar	**National conference on**	Silver nanoparticles : It's green synthesis Approach	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
14	Mrs.Ashwini Waghchaure	**National conference on**	Phase 0 Clinical Trial: A Review	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
15	Dr Sonali Uppalwar	**National conference on**	Drug Advancement post COVID-19: Towards a	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
16	Mrs.Sayali Ramesh	**National conference on**	Development and In Vitro Evaluation Of Gastro	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
17	Dr Sonali Uppalwar	**National conference on**	Centchroman:- A randomized controlled trial	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
18	Dr Sonali Uppalwar	**National conference on**	BloodRootPlant	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
19	Dr Sonali Uppalwar	**National conference on**	Tectona Grandis	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
20	Dr Sonali Uppalwar	**National conference on**	Digoxin toxicity:crucial to diagnose.	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
21	Dr Sonali Uppalwar	**National conference on**	DRUG = PAXLOVID	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
22	Dr Sonali Uppalwar	**National conference on**	Association of Hypertension and Diabetes with	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
23	Dr Sonali Uppalwar	**National conference on**	Centchroman-: A Randomized controlled trial	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
24	Dr Sonali Uppalwar	**National conference on**	Effects of caffeine on health and nutrition	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
25	Dr Sonali Uppalwar	**National conference on**	Antioxidant properties of spinacia oleracea	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
26	Dr Sonali Uppalwar	**National conference on**	Digoxin Drugs	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
27	Dr Sonali Uppalwar	**National conference on**	Ginger and Heart Health: From Mechanisms to	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
28	Dr Sonali Uppalwar	**National conference on**	Review on anti inflammatory and and Anti-	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
29	Dr Sonali Uppalwar	**National conference on**	Review on the role of ficus species (fig) in the	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
30	Dr Sonali Uppalwar	**National conference on**	Review of the evaluation of antioxidant activity of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
31	Dr Sonali Uppalwar	**National conference on**	Medicinal and Beneficial Health Applications of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
32	Dr Sonali Uppalwar	**National conference on**	Heart disease	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
33	Dr Sonali Uppalwar	**National conference on**	Advances in the quality control of fenugreek seeds	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
34	Dr Sonali Uppalwar	**National conference on**	Plant-Based Immunizations: A Promising	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
35	Dr Sonali Uppalwar	**National conference on**	Herbal drug Nutmeg	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
36	Dr Sonali Uppalwar	**National conference on**	Digoxin: A Time-Tested Cardiac Medication	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
37	Dr Sonali Uppalwar	**National conference on**	REVIEW OD AUTISM	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
38	Dr Sonali Uppalwar	**National conference on**	CHALLENGES, IN REGULATING AND	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
39	Dr Sonali Uppalwar	**National conference on**	Review on an antibiotic Ofloxacin	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial

40	Dr Sonali Uppalwar	**National conference on**	Eclipta prostrata (माको)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
41	Dr Sonali Uppalwar	**National conference on**	The effects of vitamin and mineral supplementation	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
42	Dr Sonali Uppalwar	**National conference on**	Black cohosh	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
43	Dr Sonali Uppalwar	**National conference on**	Eclipta prostrata (माको)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
44	Dr Sonali Uppalwar	**National conference on**	Guizotia abyssinica	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
45	Dr Sonali Uppalwar	**National conference on**	Recurrent respiratory pappilomatosis:A 2020	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
46	Dr Sonali Uppalwar	**National conference on**	Herbal Drugs Showing Antimicrobial Properties	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
47	Dr Sonali Uppalwar	**National conference on**	Adhatoda Vasica (Nees.): A Review On its Botany,	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
48	Dr Sonali Uppalwar	**National conference on**	Advances in the quality control of fenugreek seeds	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
49	Dr Sonali Uppalwar	**National conference on**	Environmental risk factors and Parkinson's disease	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
50	Dr Sonali Uppalwar	**National conference on**	ATTENTION ! You are having ADHD.	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
51	Dr Sonali Uppalwar	**National conference on**	Ocimum Sanctum Linn	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
52	Dr Sonali Uppalwar	**National conference on**		**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
53	Dr Sonali Uppalwar	**National conference on**	Digoxin drugs	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
54	Dr Sonali Uppalwar	**National conference on**	LECANEMAB IN EARLY ALZHEIMER'S	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
55	Dr Sonali Uppalwar	**National conference on**	Digoxin: A Time-Tested Cardiac Medication	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
56	Dr Sonali Uppalwar	**National conference on**	Tinosopora cordifolia drug .	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
57	Dr Sonali Uppalwar	**National conference on**	Therapeutic effect of Neem	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
58	Dr Sonali Uppalwar	**National conference on**	Studies on the antioxidant activities of desmodium	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
59	Dr Sonali Uppalwar	**National conference on**	Analyzing Ebola Virus Assembly Using Cryo	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
60	Dr Sonali Uppalwar	**National conference on**	Review on Anti-tuberculer drugs	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
61	Dr Sonali Uppalwar	**National conference on**	Effects of caffeine on health and nutrition	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
62	Dr Sonali Uppalwar	**National conference on**	Adhatoda vasica(nees) : A Review on its Botany,	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
63	Dr Sonali Uppalwar	**National conference on**	AUTISM	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
64	Dr Sonali Uppalwar	**National conference on**	EXPLORING THE MEDICAL CONCEVIABLE	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
65	Dr Sonali Uppalwar	**National conference on**	Recent progress in Alzheimer's disease	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
66	Dr Sonali Uppalwar	**National conference on**	Exploring the medical conceivable of illicium verum	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
67	Dr Sonali Uppalwar	**National conference on**		**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
68	Dr Sonali Uppalwar	**National conference on**	Herbal face pack	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
69	Dr Sonali Uppalwar	**National conference on**	Role of histopathology in the early diagnosis of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
70	Dr Sonali Uppalwar	**National conference on**	Advancement in HIV treatment : A Brief Overview	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
71	Dr Sonali Uppalwar	**National conference on**	The natural history of hiv infection	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
72	Dr Sonali Uppalwar	**National conference on**	Nano medicine therapeutic approches to overcome	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
73	Dr Sonali Uppalwar	**National conference on**	Young aging	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
74	Dr Sonali Uppalwar	**National conference on**	CHALLENGES IN REGULATING AND	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
75	Dr Sonali Uppalwar	**National conference on**	Targeted therapies for previously undruggable	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
76	Dr Sonali Uppalwar	**National conference on**	EXPLORING The MEDICINAL POTENTIAL OF	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
77	Dr Sonali Uppalwar	**National conference on**	An Analysis of Traditional Medicinal Plants, for	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
78	Dr Sonali Uppalwar	**National conference on**	Human Fungal Infection, Immune Response, and	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
79	Dr Sonali Uppalwar	**National conference on**	Adiphasic diabetes insipidus (ADI)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
80	Dr Sonali Uppalwar	**National conference on**	Drug Advancement post COVID-19: Towards a	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
81	Dr Sonali Uppalwar	**National conference on**	Adagrasib with or without cetuximab in colorectal	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
82	Dr Sonali Uppalwar	**National conference on**	Clinical characteristics of 7 patients with gestational	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
83	Dr Sonali Uppalwar	**National conference on**	Rafflesia Arnoldii	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
84	Dr Sonali Uppalwar	**National conference on**	Critical Overview on the Benefits and Harms of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
85	Dr Sonali Uppalwar	**National conference on**	Review on Glycoside "Glycyrrhetinic Acid."	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
86	Dr Sonali Uppalwar	**National conference on**	Pharmacological effect of ginger	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
87	Dr Sonali Uppalwar	**National conference on**	"Comprehensive Review of PCOS: Current Insights	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
88	Dr Sonali Uppalwar	**National conference on**	Justicia adhatoda	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
89	Dr Sonali Uppalwar	**National conference on**	Review On 'Arnica Montana' in Herbal Medicine	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
90	Dr Sonali Uppalwar	**National conference on**	Review On The Drug CINNAMON	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial

91	Dr Sonali Uppalwar	**National conference on**	In Donanemab Early Alzheimer's Disease	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
92	Dr Sonali Uppalwar	**National conference on**	Review on turmeric in herbal drug	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
93	Dr Sonali Uppalwar	**National conference on**	A Review on viral load Monitoring is GeneXpert of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
94	Dr Sonali Uppalwar	**National conference on**	Reetha (sapindus mukorossi): properties and benefits	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
95	Dr Sonali Uppalwar	**National conference on**	Bloodroot Plant	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
96	Dr Sonali Uppalwar	**National conference on**	Studies of Ashwagandha (WIthania somnifera)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
97	Dr Sonali Uppalwar	**National conference on**	EXPLORING THE MEDICINAL POTENTIAL OF	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
98	Dr Sonali Uppalwar	**National conference on**	Review on the role of ficus species(fig) in treatment	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
99	Dr Sonali Uppalwar	**National conference on**	Turmeric: A Multifaceted Natural Remedy	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
100	Dr Sonali Uppalwar	**National conference on**	ARTIFICIAL INTELLIGENCE IN	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
101	Dr Sonali Uppalwar	**National conference on**	Review on anti-inflammatory and anti-angiogenic	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
102	Dr Sonali Uppalwar	**National conference on**	Basil leaves (tulsi)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
103	Dr Sonali Uppalwar	**National conference on**	REVIEW ON HERBAL DRUG NUTMEG	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
104	Dr Sonali Uppalwar	**National conference on**	EFFICACY OF CINNAMON IN MANAGING	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
105	Dr Sonali Uppalwar	**National conference on**	Future trends and opportunities for Asparagus	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
106	Dr Sonali Uppalwar	**National conference on**	Black cohosh	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
107	Dr Sonali Uppalwar	**National conference on**	Herbal Formulation Stability	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
108	Dr Sonali Uppalwar	**National conference on**	Review of the evaluation of the antioxidant activity	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
109	Dr Sonali Uppalwar	**National conference on**	Asthma	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
110	Dr Sonali Uppalwar	**National conference on**	Catharanthus roseus	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
111	Dr Sonali Uppalwar	**National conference on**	Revie on castor oil herbal medicine	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
112	Dr Sonali Uppalwar	**National conference on**	Review on Papaya and it's therapeutic use	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
113	Dr Sonali Uppalwar	**National conference on**	GUIZOTIA ABYSSINICA	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
114	Dr Sonali Uppalwar	**National conference on**	Hypertension and Diabetes with Ischemic Heart	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
115	Dr Sonali Uppalwar	**National conference on**	An Analysis of Traditional Medicinal Plants, for	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
116	Dr Sonali Uppalwar	**National conference on**	Turmeric herb (curcuma longa l)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
117	Dr Sonali Uppalwar	**National conference on**	Review on Review on Lawsonia inermis	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
118	Dr Sonali Uppalwar	**National conference on**	GAN - A Generative AI-ML Approach Alternative to	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
119	Dr Sonali Uppalwar	**National conference on**	Herbal Anti Cancer Drugs	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
120	Dr Sonali Uppalwar	**National conference on**	Minoxidil in the treatment of androgenetic alopecia	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
121	Dr Sonali Uppalwar	**National conference on**	Review On An Antibiotic Ofloxacin	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
122	Dr Sonali Uppalwar	**National conference on**	Targeted drug delivery system	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
123	Dr Sonali Uppalwar	**National conference on**	A Review on Herbal Drugs Used In the Treatment of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
124	Dr Sonali Uppalwar	**National conference on**	Minoxidil in the treatment of androgenetic alopecia	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
125	Dr Sonali Uppalwar	**National conference on**	HERBAL MEDICINES AS ANTI-	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
126	Dr Sonali Uppalwar	**National conference on**	Garlic and onions: Their cancer prevention properties	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
127	Dr Sonali Uppalwar	**National conference on**	BORAGE - STARFLOWER / BEE FLOWER A	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
128	Dr Sonali Uppalwar	**National conference on**	Rewiev on ‘centella asiatica’ in herbal medicine	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
129	Dr Sonali Uppalwar	**National conference on**	Tectona grandis	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
130	Dr Sonali Uppalwar	**National conference on**	Asthama	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
131	Dr Sonali Uppalwar	**National conference on**	Recurrent Respiratory Pappilomatosis	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
132	Dr Sonali Uppalwar	**National conference on**	Microencapsulation: Advancements and Applications	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
133	Dr Sonali Uppalwar	**National conference on**	Displacement Of Drug From Human Serum Albumin	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
134	Dr Sonali Uppalwar	**National conference on**	Recent trends in herbal drug	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
135	Dr Sonali Uppalwar	**National conference on**	Babul	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
136	Dr Sonali Uppalwar	**National conference on**	Medicinal and Beneficial Health Applications of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
137	Dr Sonali Uppalwar	**National conference on**	Review of Polycystic Ovary Syndrome.	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
138	Dr Sonali Uppalwar	**National conference on**	Nanostructured Lipid Based Drug Delivery System of	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
139	Dr Sonali Uppalwar	**National conference on**	Formulation, evaluation of norfloxacin microsponges	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
140	Dr Sonali Uppalwar	**National conference on**	Azadirachta indica	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
141	Dr Sonali Uppalwar	**National conference on**	Neuropsychiatric symptoms	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
142	Dr Sonali Uppalwar	**National conference on**	IMPORTANCE AND USES OF MEDICINAL	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
143	Dr Sonali Uppalwar	**National conference on**	Black turmeric	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial

144	Dr Sonali Uppalwar	**National conference on**	Review on herbal shampoo	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
145	Dr Sonali Uppalwar	**National conference on**	Preventive role of diet interventions and dietary	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
146	Dr Sonali Uppalwar	**National conference on**	Panax Ginseng in the treatment of Alzheimer's	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
147	Dr Sonali Uppalwar	**National conference on**	Flower orientation in Gloriosa	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
148	Dr Sonali Uppalwar	**National conference on**	Sarpgandha ghanavati (rauwolfia serpentine)	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
149	Dr Sonali Uppalwar	**National conference on**	Pharmacogenomics and Personalized Medicine	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
150	Dr Sonali Uppalwar	**National conference on**	POTENTIAL USE OF SARACA ASOCAIN THE	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
151	Dr Sonali Uppalwar	**National conference on**		**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
152	Dr Sonali Uppalwar	**National conference on**	'NEPHROLITHIASIS (KIDNEY STONES)'	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
153	Dr Sonali Uppalwar	**National conference on**	Lepidium sativum	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
154	Dr Sonali Uppalwar	**National conference on**	Therapeutic potential of heterocyclic pyrimidine	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
155	Dr Sonali Uppalwar	**National conference on**	Ashwagandha	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
156	**Dr.Sonali Uppalwar**	**National conference on**	Ashwagandha	**National**	National	National	2023	**978-81-957406-9-**	**Ideal Intitute Of**	Commercial
157	**Dr Sonali Uppalwar**	hospital and clinical pharmacy of second year diploma in pharmacy	**_**	**_**	**_**	**_**	**06 (UPDATED IN 20**	**_**	**Ideal Intitute Of Pharmacy, Posheri, Wada, Palghar**	Abhi's Publication
158	Dr Sonali Uppalwar	**Pharmacognosy-I**	**-**	**-**	**-**	**-**	**08(UPDATED IN 20**	**-**	**Ideal Intitute Of Pharmacy, Posheri, Wada, Palghar**	Deepak Prakashan
159	Dr Sonali Uppalwar	Health education and community pharmacy	-	-	-	-	08(UPDATED IN 20	-	Agnihotri institute of pharmacy wardha	Abhi's Publication
160	Waghachaure	THERAPY OF CANCER	-	-	-	National	2023	202341038933 A	**Ideal Intitute Of**	The Patent
161	Dr Sonali Uppalwar	For Women	-	-	-	National	2022	371017-001	institution	The Patent
162	Dr Sonali Uppalwar	Characterization of	-	-	-	National	2022	2.02241E+11	institution	The Patent
163	Dr Sonali Uppalwar	carriers for treating lung	-	-	-	National	2022	2.02221E+11	institution	The Patent
164	Dr Sonali Uppalwar	evaluating polyherbal	-	-	-	National	2022	2.02241E+11	institution	The Patent
165	Dr Sonali Uppalwar	microbial infection	-	-	-	National	2022		institution	The Patent
166	Dr Sonali Uppalwar	Evalution of reconstitutal	-	-	-	National	2022	202211058056 A	institution	The Patent
167	Dr Juhi Dubey	based hydrophobic	-	-	-	National	2022	202221051177 A	**Ideal Intitute Of**	The Patent
168	Dr Juhi Dubey	Systematic Approach F	-	-	-	National	2022	202211052583 A	**Ideal Intitute Of**	The Patent


PCI Syllabus - B.Pharmacy
Social and Preventive Pharmacy
TECHNICAL PUBLICATIONS
An Up-Thrust for Knowledge
Dr. Hitesh V. Shahare
Sharmila Naykar-Wagh
Dr. Gaurav Jain
Dr. Abhijeet S. Pohekar
Dr. Ranajit D. Tijare
first edition : oct. 2023

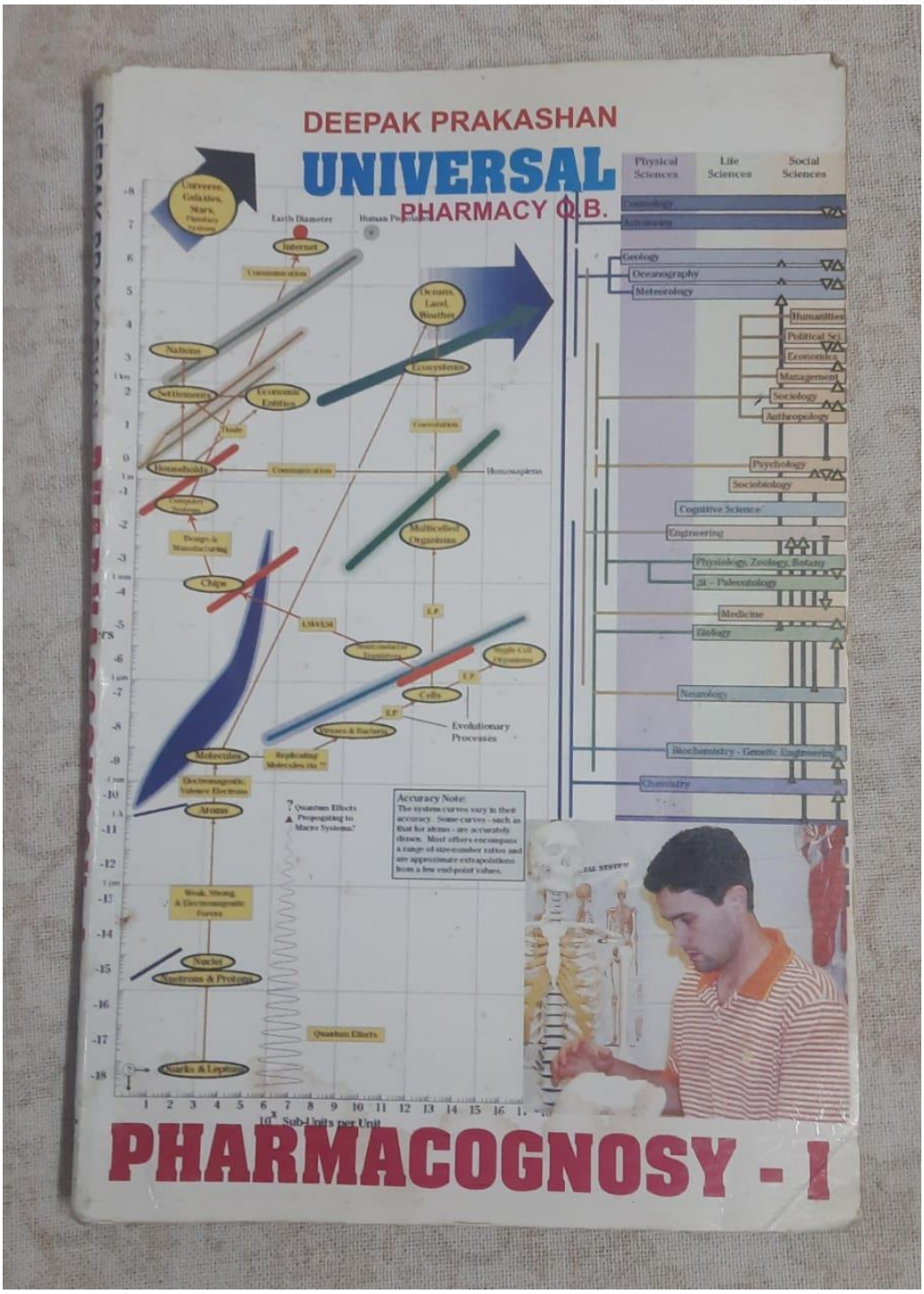

Alliance Pattern®
A revolutionary project in Educational Books
www.alliancepattern.com
Solved Question Bank
&
Paper Solution
Hospital &
Clinical Pharmacy
of
Second Year Diploma in Pharmacy
Sonali V. Uppalwar
BASED ON MSBTE SYLLABUS

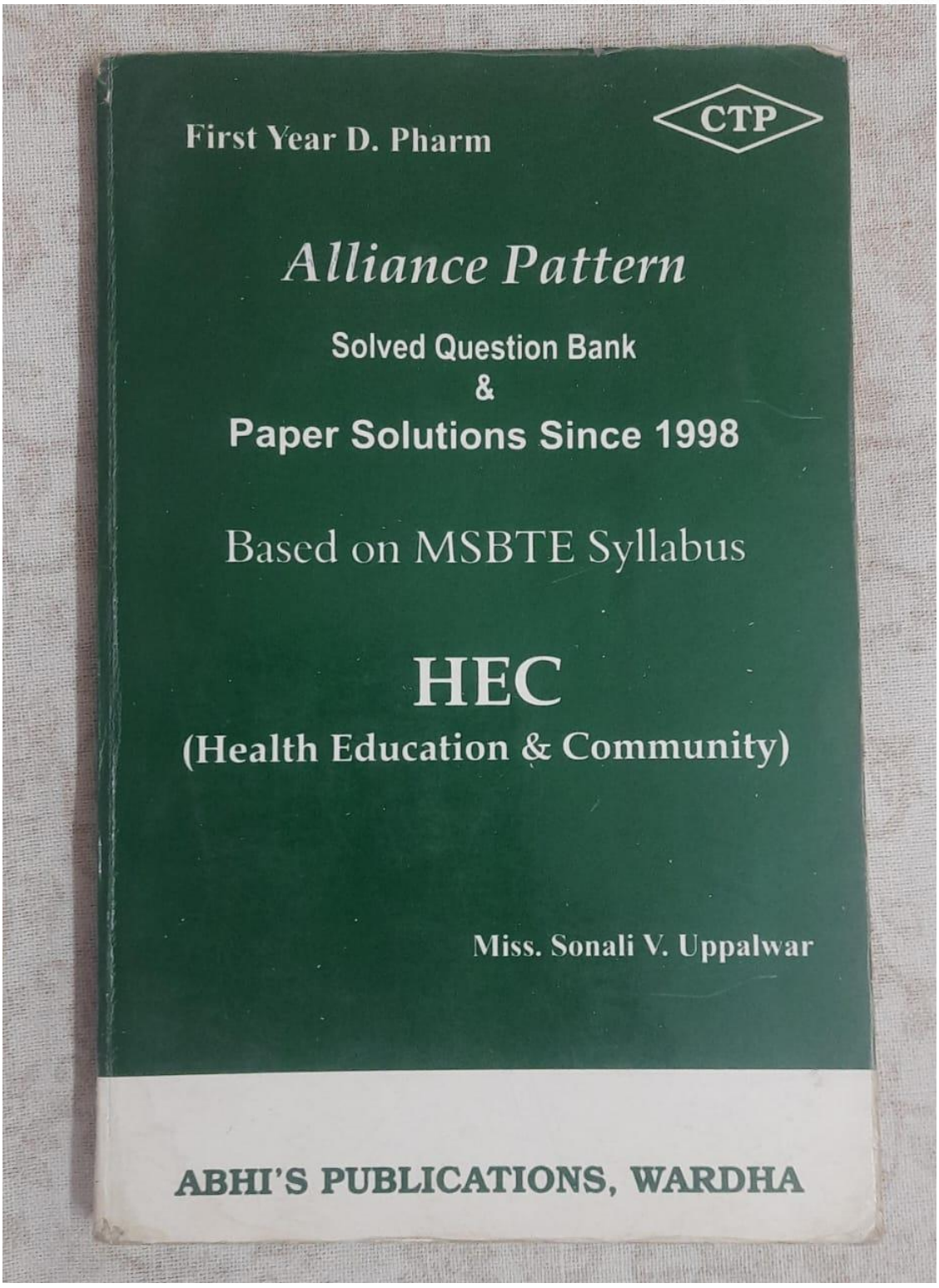
D.T.E. Code - 3487

IDEAL INSTITUTE OF PHARMACY

EMPOWERING INDIA THROUGH KNOWLEDGE

Affiliated by the Mumbai University & Approved by AICTE New Delhi, DTE Maharastra.


DEEPAK PRAKASHAN
UNIVERSAL
PHARMACY Q.B.
Physical Sciences
Life Sciences
Social Sciences
Evolutionary Processes
Accuracy Note:
PHARMACOGNOSY - I



पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 26/2023	शुक्रवार	दिनांक: 30/06/2023
ISSUE NO. 26/2023	FRIDAY	DATE: 30/06/2023

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 26/2023	शुक्रवार	दिनांक: 30/06/2023
ISSUE NO. 26/2023	FRIDAY	DATE: 30/06/2023

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :06/06/2023

(21) Application No.202341038933 A
(43) Publication Date : 30/06/2023

(54) Title of the invention : DIAGNOSIS AND THERAPY OF CANCER USING ADVANCED MULTIFUNCTIONAL MAGNETIC NANOSTRUCTURES INTEGRATED WITH ARTIFICIAL INTELLIGENCE TECHNIQUE

(51) International classification	:A61K 380000, A61K 390000, A61P 350000, G02B 213600, G16H 150000
(86) International Application No Filing Date	:PCT// :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

(71)Name of Applicant :
1)Dr Harishchander Anandaram
Address of Applicant :Assistant Professor, Centre for Computational Engineering and Networking, Amrita School of Artificial Intelligence, Coimbatore, Amrita Vishwa Vidyapeetham, India Coimbatore ---------- ----------
2)Dr. Vikash Singh Jadon
3)Dr. Deepanshu Rana
4)Dr. Ranjana Choudhary Ahirwar
5)Rajesh Babu Ahirwar
6)Abhijeet Gopal Chormale
7)Sweeti Sagar Dhanavade
8)Dr Shiva Tushir
9)Ashwini Vaibhav Waghachaure
10)Mamta Rani
11)Mohan S
12)Dr. Mukesh Kumar Meena
Name of Applicant : NA
Address of Applicant : NA
(72)Name of Inventor :
1)Dr Harishchander Anandaram
Address of Applicant :Assistant Professor, Centre for Computational Engineering and Networking, Amrita School of Artificial Intelligence, Coimbatore, Amrita Vishwa Vidyapeetham, India Coimbatore ---------- ----------
2)Dr. Vikash Singh Jadon
Address of Applicant :Associate Professor, Himalayan School of Biosciences, Swami Rama Himalayan University, Jollygrant, Dehradun, Uttarakhand-248016 Dehradun ---------- ----------
3)Dr. Deepanshu Rana
Address of Applicant :Assistant Professor, Department of Microbiology, School of Life Sciences, Sardar Bhagwan Singh University, Balawala, Dehradun, Uttarakhand-248161 Dehradun ---------- ----------
4)Dr. Ranjana Choudhary Ahirwar
Address of Applicant :Assistant Professor, Department of Chemical Engineering, IPS Academy Institute of Engineering & Science, Indore 452012, Madhya Pradesh, India. Indore ---------- ----------
5)Rajesh Babu Ahirwar
Address of Applicant :Assistant Professor/ IPS Academy, IES, Department of Electronics & Communication Engineering, Indore, 452012 Indore ---------- ----------
6)Abhijeet Gopal Chormale
Address of Applicant :CSMU School of Pharmacy, Panvel, Navi Mumbai 410221. Panvel ---------- ----------
7)Sweeti Sagar Dhanavade
Address of Applicant :Assistant professor Pharmaceutical chemistry Dr. shivajirao kadam college of pharmacy,kasbe digraj sangli Sangli ---------- ----------
8)Dr Shiva Tushir
Address of Applicant :Dr Shiva Tushir ,Assistant Professor, Department of Pharmacy, Panipat Institute of Engineering & Technology,Samalkha,Panipat,Haryana,India-132101 Samalkha ---------- ----------
9)Ashwini Vaibhav Waghachaure
Address of Applicant :Mrs. Ashwini Vaibhav Waghachaure DeAssistant Professor, Pharmaceutical Chemistry ,Ideal institute of pharmacy, wada Palghar ---------- ----------
10)Mamta Rani
Address of Applicant :Assistant Professor, Department of ECE, Jaipur Engineering College & Research Centre, Jaipur. Jaipur ---------- ----------
11)Mohan S
Address of Applicant :Assistant Professor/ECE, Nehru Institute of Engineering and Technology, Coimbatore 641105 Coimbatore ---------- ----------
12)Dr. Mukesh Kumar Meena
Address of Applicant :Assistant Professor, Department of Pharmaceutical Sciences, Mohanlal Sukhadia University, Udaipur, Rajasthan-313001 Udaipur ---------- ----------

(57) Abstract :
Diagnosis and therapy of cancer using advanced multifunctional magnetic nanostructures integrated with artificial intelligence technique is the proposed invention. the present invention relates to the field of designing and implementing a framework of artificial intelligence for analyzing the impact of multifunctional magnetic nanostructures. The proposed inventio focuses on accurate diagnosis and therapy of cancer with the intention of increasing the life span of cancer patients.

No. of Pages : 13 No. of Claims : 5

INTELLECTUAL PROPERTY INDIA

ORIGINAL
क्रम सं/ Serial No. : 151966

पेटेंट कार्यालय, भारत सरकार The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 371017-001

तारीख / Date : 19/09/2022

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *BREAST MONITORING PAD FOR WOMEN* से संबंधित है, का पंजीकरण, श्रेणी 24-01 में 1.Dr. Arvind Singh Jadon 2. Mrs. Segu Prathyusha 3.K Harsha Leena 4.Mrs. Sindhuri. P 5.Dr.Keshamma E 6.Dr. Sonali Vinod Uppalwar 7.Dr. Sweety Lanjhiyana 8.Dr. S.K. Lanjhiyana 9.Ms. Anju Daharia 10.Ms. Swapnil Deshmukh के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 24-01 in respect of the application of such design to *BREAST MONITORING PAD FOR WOMEN* in the name of 1.Dr. Arvind Singh Jadon 2. Mrs. Segu Prathyusha 3.K Harsha Leena 4.Mrs. Sindhuri. P 5.Dr.Keshamma E 6.Dr. Sonali Vinod Uppalwar 7.Dr. Sweety Lanjhiyana 8.Dr. S.K. Lanjhiyana 9.Ms. Anju Daharia 10.Ms. Swapnil Deshmukh.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि : 04/01/2024
Date of Issue

महानियंत्रक पेटेंट, डिजाइन और ट्रेडमार्क
Controller General of Patents, Designs and Trade Marks

*पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है तथा देश का नाम। डिजाइन का स्वत्वाधिकार पंजीकरण की तारीख से दस वर्ष के लिए होगा लेकिन धारा 19 अधिनियम एवं नियम के निबंधनों के अधीन, पाँच वर्षों की अतिरिक्त अवधि के लिए बढ़ाया जा सकेगा। इस प्रमाण पत्र का उपयोग विधिक कार्यवाहियों अथवा विदेश में पंजीकरण हेतु करने के लिए नहीं हो सकता है।

The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration and may make the terms of the Act and Rules to extend for a further period of five years. This Certificate is not to be used in legal proceedings or for obtaining registration abroad.

Office of the Controller General of Patents, Designs & Trade Marks
Department of Industrial Policy & Promotion,
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS
(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202241052467
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	14/09/2022
APPLICANT NAME	**1 . Mr. Kameswara Rao Sarikula** **2 . Dr. Rahul Shivajirao Solunke** **3 . Ms. Prashanti Chitrapu** **4 . Ms. Vijayananda Kisharrao Khadkutkar** **5 . Dr. Kamal Singh Rathore** **6 . Mr. Rajat Pawar** **7 . Mr. Nasheer Shadullasab Shaikh** **8 . Mr. Moein Sharfodin Attar** **9 . Dr. Sonali Vinod Uppalwar** **10 . Dr. S.K. Lanjhiyana** **11 . Dr. Sweety Lanjhiyana** **12 . Dr. Kashamma E**
TITLE OF INVENTION	OPTIMIZATION AND CHARACTERIZATION OF POLYMERS FOR CARBINOXAMINE MALEATE
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	vaagaiip@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	23/09/2022

Application Status

Office of the Controller General of Patents, Designs & Trade Marks
Department of Industrial Policy & Promotion,
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS
(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202221053282
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	18/09/2022
APPLICANT NAME	**1 . Dr. Neelima Goswami** **2 . Miss. Fiza Farheen** **3 . Dr. Kasharnma E** **4 . Dr. Mohd.Washid Khan** **5 . Mr. Manjunath U Machala** **6 . Ms. Komal Tikariya** **7 . Dr.Wajid N.Chaus** **8 . Dr. Sonali Vinod Uppalwar** **9 . Dr. Radha Ballabh Goswami** **10 . Ms. Priyanka Rathore** **11 . Ms. Payal saju** **12 . Dr. Ritesh Kumar**
TITLE OF INVENTION	POLYMER BASED NANO-CARRIERS FOR TREATING LUNG CANCER USING DRUG DELIVERY SYSTEM
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	vaagaiip@gmail.com
ADDITIONAL-EMAIL (As Per Record)	vaagaiip@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	30/09/2022

Application Status

Office of the Controller General of Patents, Designs & Trade Marks
Department of Industrial Policy & Promotion,
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS
(http://ipindia.nic.in/index.htm)

Application Details	
APPLICATION NUMBER	202241054444
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	22/09/2022
APPLICANT NAME	**1 . Dr. Kasharnma E** **2 . Dr. Sonali Vinod Uppalwar** **3 . Mr. Chandrashekhar Sahu** **4 . Ms. Vandana Gupta** **5 . Mr. Shivakumar S. Ladda** **6 . Ms. Nihali Jain** **7 , Dr. Sandeep Kumar Goyal** **8 , Dr. Arun Kumar Kashyap** **9 , Mr. Krishna Prasad Devarasingi** **10 , Dr. S.K. Lanjhiyana** **11 , Dr. Sweety Lanjhiyana** **12 , Mr. Kuldip Kumar savita**
TITLE OF INVENTION	DEVELOPING AND EVALUATING POLYHERBAL FORMULATION FOR METABOLIC DISORDER
FIELD OF INVENTION	FOOD
E-MAIL (As Per Record)	vaagaiip@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	30/09/2022

Application Status

पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 41/2022	शुक्रवार	दिनांक: 14/10/2022
ISSUE NO. 41/2022	FRIDAY	DATE: 14/10/2022

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

Office of the Controller General of Patents, Designs & Trade Marks
Department of Industrial Policy & Promotion,
Ministry of Commerce & Industry,
Government of India

(http://ipindia.nic.in/index.htm)

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS
(http://ipindia.nic.in/inde

Application Details	
APPLICATION NUMBER	202211058056
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	12/10/2022
APPLICANT NAME	**1 . Ms. Shabnam Thakur** **2 . Mr. P. Sriramcharan** **3 . Dr. Kashamma E** **4 . Dr. Sonali Vinod Uppalwar** **5 . Mr. Hansraj Bishnoi** **6 . Ms. Shreyasi** **7 . Mr. Girwash Kumar Eri** **8 . Dr. Sachin Tyagi** **9 . Dr. Omveer Singh** **10 . Mr. Jay Chandra** **11 . Mr. Sourav Khawas** **12 . Ms. Seloni Sharma**
TITLE OF INVENTION	EVALUATION OF A RECONSTITUTABLE DRY SUSPENSION TO IMPROVE THE DISSOLUTION O POORLY WATER-SOLUBLE CELECOXIB
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	vaagaiip@gmail.com
ADDITIONAL-EMAIL (As Per Record)	vaagaiip@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	21/10/2022

Application Status	
APPLICATION STATUS	**Awaiting Request for Examination**

View Documents

पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 40/2022	शुक्रवार	दिनांक: 07/10/2022
ISSUE NO. 40/2022	FRIDAY	DATE: 07/10/2022

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211052583 A

(19) INDIA

(22) Date of filing of Application :14/09/2022

(43) Publication Date : 07/10/2022

(54) Title of the invention : SYSTEMATIC APPROACH FOR ESTIMATION OF LAMOTRIGINE IN BULK AND PHARMACEUTICAL FORMULATIONS THROUGH DEVELOPMENT AND VALIDATION OF HPLC METHOD

(51) International classification :G01N0030020000, C12N0015100000, G06N0020000000, A61K0031530000, C07D0253075000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

(71)**Name of Applicant :**
1) **Mrs. SHWETA SINGH**
Address of Applicant :ASSO PROF /PHARMACY,AGRA PUBLIC PHARMACY COLLEGE 282007 AGRA ---------- ----------
2) **Dr. PRADEEP GOLANI**
3) **SANJAY NAGDEV**
4) **BHUSHAN RAJESH GUDALWAR**
5) **PRABHAT KUMAR**
6) **REKHA S**
7) **DILEND PATLE**
8) **Dr. JUHI DUBEY**
9) **NAGENDRA BHUWANE**
10) **Dr. ASHOK MAHAJAN**
11) **Dr.ARUN KUMAR PATEL**
12) **ANURAG SINGH**
Name of Applicant : NA
Address of Applicant : NA
(72)**Name of Inventor :**
1) **Mrs. SHWETA SINGH**
Address of Applicant :ASSO PROF /PHARMACY,AGRA PUBLIC PHARMACY COLLEGE 282007 AGRA ----------
2) **Dr. PRADEEP GOLANI**
Address of Applicant :PROFESSOR, GYAN GANGA INSTITUTE OF TECHNOLOGY AND SCIENCES -PHARMACY, JABALPUR, M.P. JABALPUR ---------- ----------
3) **SANJAY NAGDEV**
Address of Applicant :ASSOCIATE PROFESSOR, DEPARTMENT OF PHARMACY, GYAN GANGA INSTITUTE OF TECHNOLOGY AND SCIENCES, JABALPUR JABALPUR ---------- ----------
4) **BHUSHAN RAJESH GUDALWAR**
Address of Applicant :ASSISTANT PROFESSOR, VALMIK NAIK COLLEGE OF PHARMACY, KANNAD, DIST AURANGABAD AURANGABAD ---------- ----------
5) **PRABHAT KUMAR**
Address of Applicant :LECTURER/ USHA MARTIN UNIVERSITY ,ANGARA RANCHI JHARKHAND-835103 RANCHI ---------- ----------
6) **REKHA S**
Address of Applicant :ASSISTANT PROFESSOR/ PHARMACEUTICAL CHEMISTRY, COLLEGE OF PHARMACEUTICAL SCIENCES, BANGALORE, 560078 BANGALORE ----------
7) **DILEND PATLE**
Address of Applicant :ASSISTANT PROFESSOR DEPARTMENT OF PHARMACY SHRI RAWATPURA SARKAR INSTITUTE OF PHARMACY JABALPUR M.P (483053) JABALPUR ----------
8) **Dr. JUHI DUBEY**
Address of Applicant :PROFESSOR, IDEAL INSTITUTE OF PHARMACY,421303 VILLAGE-POSHERI, TAL ---------- ----------
9) **NAGENDRA BHUWANE**
Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF PHARMACY, SHRI RAWATPURA SARKAR UNIVERSITY ,DHANELI , RAIPUR , CHHATTISGARH , INDIA RAIPUR ----------
10) **Dr. ASHOK MAHAJAN**
Address of Applicant :PROFESSOR, DEPARTMENT OF PHARMACEUTICS, KRISHNA SCHOOL OF PHARMACY & RESEARCH, VADODARA GUJARAT VADODARA ----------
11) **Dr.ARUN KUMAR PATEL**
Address of Applicant :MADHOTAL MADHOTAL ---------- ----------
12) **ANURAG SINGH**
Address of Applicant :ASSOCIATE PROFESSOR, SHAMBHUNATH INSTITUTE OF PHARMACY PRAYAGRAJ PRAYARAJ ---------- ----------

(57) Abstract :

Systematic approach for estimation of lamotrigine in bulk and pharmaceutical formulations through development and validation of HPLC Method. The invention focuses on analysing the estimates of lamotrigine in bulk using a systematic approach. The development of pharmaceutical formulations and their validation through HPLC method is considered. The algorithms of machine learning are used for the purposed of analysing the estimates.

No. of Pages : 13 No. of Claims : 5

पेटेंट कार्यालय
शासकीय जर्नल

OFFICIAL JOURNAL
OF
THE PATENT OFFICE

निर्गमन सं. 43/2022	शुक्रवार	दिनांक: 28/10/2022
ISSUE NO. 43/2022	FRIDAY	DATE: 28/10/2022

पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :07/09/2022

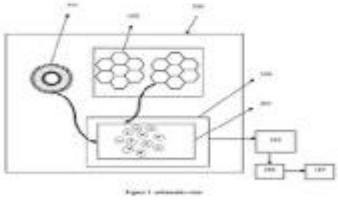
(21) Application No.202221051177 A
(43) Publication Date : 28/10/2022

(54) Title of the invention : ARTIFICIAL INTELLIGENCE BASED HYDROPHOBIC DRUG DELIVERY THROUGH LIPOSOMAL FORMULATION FOR TREATING CANCER

(51) International classification :C01D0011300000, A61M0005168000, H01S0005023250, G11B0011105000, C07D0405120000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)Name of Applicant :
1)Dr. PRASHANT TIWARI
Address of Applicant :ASSOCIATE PROFESSOR, SCHOOL OF PHARMACY, G H RAISONI UNIVERSITY, AMRAVATI- 444701 AMRAVATI ---------- ----------
2)Dr JUHI DUBEY
3)MRS SHWETA SINGH
4)URVASHI SHARMA
5)Dr. ANAMIKA SAXENA
6)BALJEET KAUR
7)Dr.ADITYA PARASHAR
8)Dr. NANSRI SAHA
9)Dr.M.GNANA RUBA PRIYA
10)ANCHAL VERMA
11)Dr SAILESH NARAYAN
12)GANESH PRASAD PATEL
Name of Applicant : NA
Address of Applicant : NA
(72)Name of Inventor :
1)Dr. PRASHANT TIWARI
Address of Applicant :ASSOCIATE PROFESSOR, SCHOOL OF PHARMACY, G H RAISONI UNIVERSITY, AMRAVATI- 444701 AMRAVATI ---------- ----------
2)Dr JUHI DUBEY
Address of Applicant :PROFESSOR, IDEAL INSTITUTE OF PHARMACY, MAHARASHTRA, PIN-421303 VILLAGE-POSHERI, TAL ---------- ----------
3)MRS SHWETA SINGH
Address of Applicant :ASSOCIATE PROFESSOR/PHARMACY,AGRA PUBLIC PHARMACY COLLEGE, AGRA,282007 AGRA ---------- ----------
4)URVASHI SHARMA
Address of Applicant :ASSISTANT PROFESSOR/ FACULTY OF PHARMACY, MEDI-CAPS UNIVERSITY, INDORE, 453331 INDORE ---------- ----------
5)Dr. ANAMIKA SAXENA
Address of Applicant :DEVSTHALI VIDYAPEETH COLLEGE OF PHARMACY RUDRAPUR ---------- ----------
6)BALJEET KAUR
Address of Applicant :ASSISTANT PROFESSOR/ PHARMACY, DEVSTHALI VIDYAPEETH COLLEGE OF PHARMACY RUDRAPUR LALPUR,263148 RUDRAPUR ---------- ----------
7)Dr.ADITYA PARASHAR
Address of Applicant :ASSISTANT PROFESSOR(PHARMACY PRACTICE) SRI AUROBINDO INSTITUTE OF PHARMACY INDORE ---------- ----------
8)Dr. NANSRI SAHA
Address of Applicant :DEPT- PHARMACEUTICS, ASSOCIATE PROFESSOR, SSJ COLLEGE OF PHARMACY, GANDIPET, 500075 HYDERABAD ---------- ----------
9)Dr.M.GNANA RUBA PRIYA
Address of Applicant :ASSISTANT PROFESSOR, DEPARTMENT OF PHARMACEUTICAL CHEMISTRY, COLLEGE OF PHARMACEUTICAL SCIENCES, DAYANANDA SAGAR UNIVERSITY BANGALORE BANGALORE ---------- ----------
10)ANCHAL VERMA
Address of Applicant :ASSISTANT PROFESSOR, SHRI RAWATPURA SARKAR INSTITUTE OF PHARMACY, KUMHARI, CHHATTISGARH, 490042 KUMHARI ---------- ----------
11)Dr SAILESH NARAYAN
Address of Applicant :HEAD, DEPARTMENT OF PHARMACY, USHA MARTIN UNIVERSITY, VILL. NARAYANSOSO, ANGARA BLOCK, RANCHI-835103 JHARKHAND RANCHI ---------- ----------
12)GANESH PRASAD PATEL
Address of Applicant :ASSOCIATE PROFESSOR, DEPARTMENT OF PHARMACEUTICAL CHEMISTRY, SAGAR INSTITUTE OF PHARMACY AND TECHNOLOGY GANDHINAGAR BHOPAL, 462036 BHOPAL ---------- ----------

(57) Abstract :
Artificial intelligence based hydrophobic drug delivery through liposomal formulation for treating cancer is the proposed invention. The invention aims at implementing algorithms of Artificial Intelligence based drug delivery system i.e., through hydrophobic drugs. The liposomal formulations are used to treat cancer for increasing the efficiency of treatment.



No. of Pages : 13 No. of Claims : 6

WJPR
WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
(An ISO 9001:2015 Certified International Journal)
An International Peer Reviewed Journal for Pharmaceutical and Medical Research and Technology
Impact Factor : 8.084
ICV : 90.8
THU, JAN 25 2024 | 11:32:14 AM
World Journal of Pharmaceu

Abstract

NATURAL DRUGS AS COGNITIVE ENHANCER: A SURVEY ARTICLE

Pradeep Yadav*; Preeti Yadav, Soni Yadav, Bindlya Yadav, Vijay Yadav, Mrs. Shikha Shukla and Dr. Dilcep Bharati

Abstract

Introduction: Memory, one of the most vital aspects of the human brain. It is necessary for the effective survival of an individual. Over the years a large number of herbal medications have been used to enhance cognition and memory. Plants are a source of pharmacological potent drug molecules of high efficacy. Recently herbal medicine has evolved rapidly, gaining great acceptance due to their natural origin and few side effects. Yet there is limited knowledge about the population awareness of cognitive enhancers. As such, the aim of this study was to assess whether people are willing to take Brain tonics as cognitive enhancers. Method: The survey is an online questionnaire available in 2 languages to anyone above the age of 16 years. The question focuses on 1) Willingness and motivation to maintain or improve brain health. 2) Interest in learning more about individual brain health using medicinal herbs. The survey includes 15 questions and takes 08-10 minutes to complete. The survey was launched on January 29,2022 and closed on March 10 2022. Discussion: Results will help us to better understand the views of people on brain health and medicinal herbs as cognitive enhancers and most importantly the population already aware about medicinal herbs and used it, are satisfied with it or not.

Keywords: Survey, Brain health, Cognitive enhancer, Natural, Medicinal herbs

IDEAL INSTITUTE OF PHARMACY * DTE CODE 3107 * WADA *

PRINCIPAL
Ideal Institute Of Pharmacy
At-post-posher, Tal- Wada,
Dist - Palghar Maharashtra 421303

View full text

Nat Prod Res. 2023 Mar 17:1-4. doi: 10.1080/14786419.2023.2189709 Online ahead of print

Isolation, characterization, and evaluation of anxiolytic bioactive compounds from the seed of *Vigna radiata (L.)* R. Wilczek in mice

Sonali V Uppalwar [1], Vandana Garg [2], Shrikant Joshi [3], Rohit Dutt [4]

Affiliations

PMID: 36929717 DOI: 10.1080/14786419.2023.2189709

Abstract

Recent therapy for managing anxiety disorders is linked with a wide range of adverse effects. The conventional practice of the use of plant extract may indicate an important and new approach to the anxiolytic agent. Seeds of *V. radiata* belonging to the family Fabaceae is commonly employed to treat several diseases. However, no data is available to screen its viable neuropharmacological effect regardless of its famous use. Hence, the objective of the present study was to isolate the anxiolytic bioactive compound from seeds of *V. radiata*. Pure bioactive Compounds SU1 and SU2 were obtained from bioactive fraction F9.3 and fraction F9.5 using the bioactivity-guided fractionation method. The current investigation found that 4 mg/kg (o.p.) of kaempferol and γ-aminobutyric acid exhibit significant anxiolytic action in mice that is statistically comparable to diazepam (2 mg/kg.i.p). This study validates the ethnopharmacological use of *V. radiata* seeds in the management of anxiety disorders.

Keywords: Anxiolytics; Kaempferol; Vigna radiata (L.) seeds; characterization; fractionation; gamma aminobutyric acid.

DESIGN AND EVALUATION OF NIRGUDI OIL LOADED NANO STRUCTURED LIPID CARRIER

Sharmila naykar wagh*1, Swati Talele1, Ashwini V Waghachaure2, Priyanka P Jadhav3, Mithilesh Kumar Narware4, Rechita A. Bhoir5, Sayali R. Gunjal3, Mahesh P Junghare6, Kshitija P. Deshmukh7, Rupali bhoir8

Keywords: Nanostructured lipid carriers,Nirgudi oil factorial design,GMS, Tween 80.

Publisher 05-12-2023

Issue
Vol: 27 Issue: 02: 2023

ABSTRACT:-

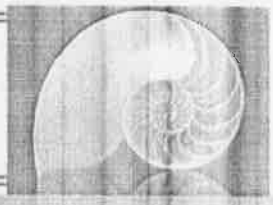
Aim: The objective of present study was to design development and fabrication of Nirgudi oil loaded NLC using factorial design. Materials and Methods: NLC were fabricated by melt dispersion ultrasonication method. NLC containing mixtures of Glycerylmonostearate as solid lipid and Nirgudi Oil as liquid lipid and Tween-80 as surfactant. Results and discussion: The particle size of the NLC was found between 23.65 and 85.69 nm , zeta potential found between -10.1 to - 26.18. The NLC dispersions was gelled using gelling agent carbopol. The NLC based gel of nirgudi oil was evaluated for spreadability, SEM, stability studies, conclusion: Study conduce that formulation is stable and used for topical application and it shows antifungal activity.

European Chemical Bulletin

(https://www.eurchembull.com/)

ISSN 2063-5346

European Chemical Bulletin



European Chemical Bulletin

ISSN 2063-5346

Open Access E-Journal

Volume - 13 | Issue-1

SEVERITY OF URINARY TRACT INFECTION SYMPTOMS AND THE ANTIBIOTIC RESISTANCE IN A TERTIARY CARE CENTRE IN PAKISTAN (Https://Www.Eurchembull.Com/Issue-Content/Severity-Of-Urinary-Tract-Infection-Symptoms-And-The-Antibiotic-Resistance-In-A-Tertiary-Care-Centre-In-Pakistan-15020)

Volume - 13 | Issue-1

THE INCIDENCE AND MICROBIOLOGICAL CHARACTERISTICS OF DIABETIC FOOT: RETROSPECTIVE STUDY AT TERTIARY CARE CENTRE IN PAKISTAN (Https://Www.Eurchembull.Com/Issue-Content/The-Incidence-And-Microbiological-Characteristics-Of-Diabetic-Foot-Retrospective-Study-At-Tertiary-Care-Centre-In-Pakistan-15019)

Volume - 13 | Issue-1

AN EMPIRICAL INVESTIGATION OF HOW FINANCIAL INCLUSION AFFECTS RURAL WOMEN'S EMPOWERMENT THROUGH BANKING SERVICES (Https://Www.Eurchembull.Com/Issue-Content/An-Empirical-Investigation-Of-How-Financial-Inclusion-Affects-Rural-Women-S-Empowerment-Through-Banking-Services-14998)

Volume - 13 | Issue-1

ESSENTIAL OILS AS BIOPESTICIDES IN PEST MANAGEMENT: SAFER ALTERNATIVES TO SYNTHETIC PESTICIDES (Https://Www.Eurchembull.Com/Issue-Content/Essential-Oils-As-Biopesticides-In-Pest-Management-Safer-Alternatives-To-Synthetic-Pesticides-14995)

Volume - 13 | Issue-1

Required files to be uploaded

Copyright (https://drive.google.com/file/d/1wax86rG-nYZIc9w4ok5d5ZzR-Bskxovl/view?usp=share_link)

DESIGN AND DEVELOPMENT OF CITRONELLEA OIL MICROEMULSION FOR EFFECTUAL TOPICAL DELIVERY

PDF (https://www.eurchembull.com/uploads/paper/9bae10975d0a4a4a6ea34e78ea3acf8f.pdf)

Keywords:

Microemulsion, Citronella oil, Topical delivery, Antifungal, Microemulsion based gel, Candidaalbicans

NaykarSharmila,Mithilesh Kumar Narware1,Ashwini Vaibhav Waghachaure, Priyanka Pratap Jadhav,RuchitaArun Bhoir,Sayali Ramesh Gunjal

» doi: 10.48047/ecb/2023.12.si4.1834

(https://www.eurchembull.com/./uploads/paper/9bae10975d0a4a4a6ea34e78ea3acf8f.pdf)

Abstract

The purpose of this study was to formulate topical microemulsion gel of citronella oil suitable for topical delivery Citronella oil micro emulsion system with Tween 20 as Surfactant, PEG 200 as cosurfactant and citronella oil as oil was developed for topical delivery. Pseudo ternary phase diagram were constructed to identify the microemulsion region and a suitable composition was identified to formulate the microemulsion. Single isotropic region, which is considered as an O/W microemulsion was found in the pseudo ternary phase diagram developed at various Tween 20 and PEG 200 ratio using phase titration method. The developed microemulsion was characterized for clarity, Zeta potential, Viscosity, Globule size. Centrifugation studies were carried out to confirm the stability of the developed formulation. The formulation was thickened with a gelling agent carbopol 940 and xanthum gum, to yield a gel with desirable properties facilitating the topical application. The developed microemulsion based gel was characterized for pH, Spreadability, Viscosity. Optimized microemulsion based gel formulation was found to exhibit significant antifungal activity against candida Albicansspecies. Thus the present study indicates that developed topical microemulsion gel of citronella oil effective for treatment of fungal infection.

Issue

Volume -12, Special Issue-4 (2023)

()

(https://www.scopus.com/sourceid/21100898023)

POLICIES & JOURNAL INFO

Abstracting and Indexing (https://www.eurchembull.com/abstracting-and-indexing)

Archive (https://www.eurchembull.com/archive)

Contact Us (https://www.eurchembull.com/contact-us)

Contact Us

eurochemicalbulletin@gmail.com

eurochemicalbulletin@gmail.com

eurochemicalbulletin@gmail.com

IDEAL INSTITUTE OF PHARMACY WADA

PRINCIPAL
Ideal Institute Of Pharmacy
At-post-poshiri, Tal- Wada,
Dist - Palghar Maharashtra 421303

Review Article

Exploring non-high-density lipoprotein estimation methods and their clinical significance in cardiovascular disease

Pallavi Hangargekar[1], Deepak Jha[1*], Md Akbar[2], Swati Pawar[1], Amol Joshi[1]

[1]*ASPM's K.T. Patil College of Pharmacy, Dharashiv 413501, Maharashtra, India*

[2]*School of Pharmacy, Al-Karim University, Katihar 854106, Bihar, India*

Received: 2 March 2023 Revised: 20 April 2023 Accepted: 24 April 2023

Abstract

Cardiovascular diseases (CVD) are a leading cause of global mortality and morbidity. Elevated low-density lipoprotein cholesterol (LDL-c) levels have been identified as a primary risk factor for CVD. However, the LDL/high-density lipoprotein (HDL) cholesterol ratio has emerged as a more effective risk indicator, considering the role of HDL in preventing atherosclerosis. Non-high-density lipoprotein cholesterol (non-HDL-c) has been recognized as a superior predictor of CVD risk compared to LDL-c alone, especially in individuals with hypertriglyceridemia or other lipoprotein abnormalities. Estimating non-HDL-c provides valuable information for assessing CVD risk beyond LDL-c alone. International guidelines have incorporated non-HDL-c as a secondary goal in lipid-associated risk assessment, along with plasma apolipoprotein B (apoB). Non-HDL-c estimation offers better risk estimation than LDL-c and is a valuable marker in clinical practice. It is recommended as a secondary therapy target for patients with high triglyceride levels and cardiovascular disease risk. Additionally, non-HDL-c has been associated with cardiovascular outcomes and is considered a long-term predictive marker. Integrating non-HDL-c and apoB into traditional lipid testing may improve diagnostic and prognostic accuracy. This article explores the clinical significance and various methods of estimating non-HDL-c in the context of CVD.

Keywords: Cardiovascular diseases, non-high-density lipoprotein cholesterol, high-density lipoprotein cholesterol ratio, lipid-associated risk, hypertriglyceridemia

Introduction

Cardiovascular diseases (CVD) remain a significant global health challenge, contributing to high mortality and morbidity rates (Roth et al., 2020). CVDs are the leading cause of death globally, accounting for approximately 31% of all deaths in 2016, with heart attacks and strokes responsible for 85% of these fatalities (Chung, 2019).

Elevated low-density lipoprotein cholesterol (LDL-c) levels have been established as a primary risk factor for CVD (Roth et al., 2020). Extensive genetic, epidemiological, and clinical studies have consistently demonstrated a direct correlation between plasma LDL-c concentrations and the incidence of coronary events and cardiovascular deaths (Carr et al 2019). While LDL-c has traditionally been the primary target for lipid-lowering therapy, the LDL/high-density lipoprotein cholesterol (HDL-c) ratio has emerged as a more effective risk indicator than LDL alone. This is attributed to the "reverse cholesterol transport" mechanism, wherein HDL prevents or reverses the formation of atherosclerotic plaques resulting from LDL metabolism (Aru et al ,2017).

Clinical trials investigating lipid-lowering drugs have unequivocally shown that reducing LDL-c levels leads to substantial reductions in morbidity and mortality both in patients with established coronary heart disease (CHD) and those without (Carr, 2019). Consequently, HDL may serve as an integrative marker for CVD beyond its role as a causal factor (Aru et al , 2017).

**Address for Corresponding Author:*
Deepak Jha
ASPM's K.T. Patil College of Pharmacy,
Dharashiv 413501, Maharashtra, India
Email: drdbjmw@gmail.com

DOI: https://doi.org/10.31024/apj.2023.8.2.1

Notably, aggressive lowering of plasma LDL-c as secondary prevention has demonstrated improved survival rates (Carr, 2019). It is now recognized that other lipoprotein fractions, such as non-high-density lipoprotein cholesterol (non-HDL-c), also contribute to CVD risk (Brunner et al., 2019). Several studies, including the Health Professionals Follow-up Study, Safari, and Copenhagen City Heart Study, have indicated that non-HDL-c correlates more strongly with apolipoprotein B (apoB) and demonstrates similar or higher diagnostic value as a risk factor (Aggarwal et al., 2021).

The international guidelines for CVD prevention have been revised to incorporate these key findings, leading to modifications in recommendations and treatment strategies. These guidelines advocate for a broader approach to lipid-associated risk assessment, highlighting the importance of non-HDL-c and plasma apoB as subsidiary goals. These parameters provide an index of all potentially atherogenic lipoprotein species present in the bloodstream (Packard et al., 2022).

Current guidelines emphasize the assessment of lipid profiles to evaluate cardiovascular risk before initiating lipid-lowering therapy. The latest National Institute for Health and Care Excellence (NICE) and Scottish Intercollegiate Guidelines Network (SIGN) clinical guidelines underscore the significance of individualized risk assessment, utilizing the QRESEARCH cardiovascular risk algorithm (QRISK) score where appropriate, and recommend evaluating a comprehensive lipid profile, including total cholesterol (TC), HDL-c, non-HDL-c, and triglyceride (TG) concentrations. This approach allows for a better determination of cardiovascular risk and identification of circumstances where additional support may be required (Reynolds et al., 2021). Therefore, this article explores various methods of estimating non-HDL-c and their clinical significance in CVD.

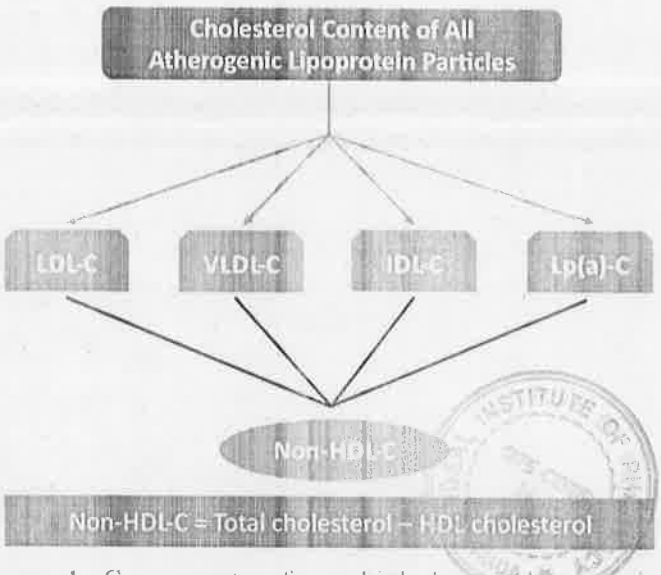


Figure 1. Components of non-high-density lipoprotein cholesterol

Non-high-density lipoprotein-cholesterol as a cardiovascular risk factor

A non-HDL-c encompasses the TC content of all lipoprotein fractions except for HDL-c. This includes not only LDL-c but also very low-density lipoprotein cholesterol (VLDL-c), intermediate-density lipoprotein cholesterol (IDL-c), and lipoprotein(a) cholesterol [Lp(a)] (Varbo, 2011).

Non-HDL-c has been recognized as a superior predictor of CVD risk compared to LDL-c alone, particularly in individuals with elevated TG levels or other lipoprotein abnormalities (Aggarwal et al., 2021; Davidson and Pulipati, 2022). Non-HDL-c serves as a useful marker for TG and TG-rich remnant particles (Wiklund et al., 2010). Concordance/discordance analyses suggest that calculating non-HDL-c is at least equally effective in predicting atherosclerotic cardiovascular disease (ASCVD) compared to measuring or calculating LDL-c, both in the general population and statin-treated patients. In some instances, non-HDL-c may even outperform LDL-c, especially when there are discrepancies between the two measures, particularly at normal or low LDL-c concentrations or in individuals with hypertriglyceridemia, as non-HDL-c incorporates Remnant cholesterol (Remnant-c) (Nordestgaard et al., 2020).

Remnant-c refers to the cholesterol content carried by remnant lipoproteins, a type of lipoprotein particle that remains after removing TG-rich lipoproteins, such as chylomicrons and VLDL, from circulation. Remnant-c represents a subset of non-HDL-c (TC minus HDL-c) and is considered a proatherogenic lipid. Elevated levels of Remnant-c have been associated with an increased risk of CVD, including coronary artery disease (CAD). Remnant-c is believed to contribute to atherosclerosis by promoting the formation of cholesterol-rich plaques in blood vessels. Assessing Remnant-c levels, and other lipid parameters, can provide additional information about an individual's lipid profile and cardiovascular risk. However, it is essential to note that the measurement of Remnant-c is not commonly performed in routine clinical practice and may require specialized laboratory testing methods.

Expert consensus groups have defined non-HDL-c thresholds based on the assumption that a normal VLDL-c concentration exists when TG levels are <1.7 millimoles per liter (mmol/L), which is <0.8 mmol/L as estimated by the Friedewald formula. Adjusting non-HDL-c thresholds leads to the reclassification of patients either upward (for undertreatment reduction goals) or downward (for

overtreatment reduction goals) (Nordestgaard et al.; 2020).

The European Prospective Investigation into Cancer-Norfolk study established that an individual non-HDL-c >30 milligrams per deciliter (mg/dL) higher than LDL-c predicts an increased risk of CHD, while TG levels >150 mg/dL or a TC/HDL-c ratio >5 are associated with elevated CHD risk. Non-HDL-c is strongly associated with cardiovascular events and is sometimes considered a proxy for apoB. A study utilizing Framingham data found VLDL-c to be a significant predictor of cardiovascular risk and indicated that non-HDL-c is superior to LDL-c in predicting risk. Non-HDL-c provides a more comprehensive measure of atherogenic particles and is believed to be superior in capturing residual risk and predicting cardiovascular events. Evidence suggests that monitoring and targeting non-HDL-c can better predict cardiovascular events than focusing on LDL-c alone, potentially yielding up to twice the effectiveness (Kones, 2011). During statin treatment, monitoring non-HDL-c levels serves as a better indicator of CVD risk (Aggarwal et al., 2021).

According to the recent guidelines of the European Society of Cardiology on cardiovascular disease prevention in clinical practice, non-HDL-c, which includes all atherogenic (apoB-containing) lipoproteins, is utilized as an input in the Systemic Coronary Risk Estimation 2 (SCORE2) and SCORE2-older Persons (SCORE2-OP) risk algorithms. This inclusion underscores the significance of non-HDL-c in assessing cardiovascular risk. In a study investigating the relationship between lipid profiles, lipid ratios, and arterial stiffness, participants with higher non-HDL-c/HDL-c ratios were found to have an increased risk of arterial stiffness compared to those with other lipid parameters (Baba et al., 2023).

Estimation of non-high-density lipoprotein cholesterol

Estimation of non-HDL-c involves calculating the cholesterol content in all particles associated with CVD, including LDL, VLDL, IDL, and Lp(a). Non-HDL-c is obtained by subtracting HDL-c from TC. This estimation provides a more comprehensive risk assessment than LDL-c alone, particularly in individuals with hypertriglyceridemia, as it takes into account the atherogenic potential of remnant lipoproteins, including Remnant-c (Nordestgaard et al., 2020).

Plasma lipoproteins are classified based on their buoyant density, influenced by lipid composition and the lipid-to-protein ratio. They are grouped into chylomicrons (CM), VLDL, IDL, LDL, and HDL, with subfractions within each group. Density gradient ultracentrifugation (UC) is the gold standard method for isolating and quantifying lipoproteins, but it is time-consuming and labor-intensive (Redgrave et al., 1975; Kunitake and Kane, 1982). Alternative methods include gel electrophoresis, gel-permeation high-performance liquid chromatography (GP-HPLC), and nuclear magnetic resonance (NMR) spectroscopy (Aru 2017; Bergmann, 2010).

The simplest method for estimating non-HDL-c is subtracting HDL-c from TC, but it assumes the equal contribution of all lipoprotein fractions apart from HDL to CVD risk. Advanced methods involve direct measurement of different lipoprotein fractions using UC or NMR spectroscopy, which provide more accurate assessments but are expensive and not widely available (Aru et al., 2017).

High-field ^{1}H nuclear magnetic resonance (^{1}H-NMR) can serve as an alternative to standard methods for quantifying total lipoproteins. Although primarily used for structure elucidation and quantifying chemical mixtures, ^{1}H-NMR is sensitive to the size (translational and rotational diffusion) and density of macromolecules and supramolecular aggregates, making it a valuable tool for lipoprotein profiling (Savorani et al., 2013).

A study found that non-HDL-c levels were associated with an increased risk of ASCVD events, and the data were used to develop a risk prediction tool (Pickard et al., 2023). In the fasting state, non-HDL-c represents the cholesterol content in atherogenic particles, and it is a useful alternative to calculated LDL-c for patients with high TG levels where the Friedewald equation is invalid. In healthy individuals, non-HDL-c may be considered equivalent to apoB and LDL particle numbers for accurate risk assessment (Kones, 2011).

Overall, estimating non-HDL-c provides valuable information for assessing CVD risk beyond LDL-c alone, especially in individuals with hypertriglyceridemia or other lipoprotein abnormalities. However, the choice of estimation method depends on the available resources and the specific needs of the clinical setting.

Utility of non-high-density lipoprotein cholesterol estimation in clinical practice

The utility of non-HDL-c estimation in clinical practice is well recognized. The National Cholesterol Education Program (NCEP) Expert Panel recommends non-HDL-c as a secondary therapy target after LDL-c for patients with high TG and CVD risk or history. This secondary goal can be set at 30 mg/dL higher than LDL-c, assuming a VLDL-c level ≤30 mg/dL is normal. The non-HDL-c goal involves weight reduction, physical activity, and drug therapy (Lorenzo et al., 2007).

The 2019 European Society of Cardiology (ESC) and

European Atherosclerosis Society (EAS) guidelines also emphasize the utility of non-HDL-c. They recommend measuring apolipoprotein B-100 (apoB100) and non-HDL-c as part of routine lipid analysis for risk evaluation in patients with elevated plasma TG, diabetes mellitus, obesity, or VLDL-c levels (Mach et al., 2020). Similarly, the American College of Cardiology (ACC)/American Heart Association (AHA) guidelines advocate for non-HDL-c as a target in lipid-lowering therapy. It is suggested as a secondary target for high-risk patients with diabetes, chronic kidney disease (CKD), or a history of premature CVD. Furthermore, non-HDL-c is recommended as a primary target for lipid-lowering therapy in patients with hypertriglyceridemia (Grundy et al., 2019).

Non-HDL-c has several advantages over LDL-c. It includes Remnant-c and is independent of TG variability. Thus, it provides a more accurate measure than LDL-c in individuals with hypertriglyceridemia, non-fasting samples, and those with VLDL-c concentrations. Meta-analyses have shown that non-HDL-c is as good as LDL-c in assessing the risk of ASCVD and even superior to LDL-c in individuals with mild to moderate hypertriglyceridemia (Carr et al., 2019). Non-HDL-c estimation offers better risk estimation than LDL-c, especially in individuals with hypertriglyceridemia combined with diabetes, metabolic syndrome, or CKD. There is a direct and consistent relationship between the degree of non-HDL-c reduction and the reduction in CVD risk. Therefore, non-HDL-c serves as a valuable marker in clinical practice (Langlois et al., 2012). One of the reasons why non-HDL-c is considered a more reliable measurement than LDL-c is its analytical advantage. Unlike direct LDL-c measurement, which relies on the Friedewald equation and requires TG levels for calculation, non-HDL-c encompasses a smaller component of direct measurement. This makes non-HDL-c results more robust (Carr et al., 2019).

The potential utility of non-HDL-c as an integrated biomarker has been investigated in a pooled analysis of 44 cohorts from multiple countries. The study found that non-HDL-c was associated with CVD outcomes over a median observation period of 13.5 years in a large sample of subjects without overt CVD at baseline. This highlights the long-term predictive value of non-HDL-c in assessing cardiovascular risk (Packard et al., 2022). Incorporating novel biomarkers such as apoB100 and non-HDL-c into traditional lipid testing has shown promise in adding diagnostic and prognostic information in epidemiological studies and interventional trials. This integration of markers in cardiovascular disease prevention strategies may help reduce errors and improve outcomes (Langlois et al., 2012).

The National Cholesterol Education Program Adult Treatment Panel III guidelines currently prioritize LDL-c as the primary target for monitoring. However, once the LDL-c goal is achieved and if TG levels exceed 200 mg/dL, non-HDL-c is set as a secondary goal, typically 30 mg/dL higher than the LDL goal. This approach acknowledges the importance of non-HDL-c in managing lipid levels (Kones et al., 2011). Both non-HDL-c and apoB100 have been suggested as more accurate markers than LDL-c for assessing the risk of vascular disease. Non-HDL-c reflects the total mass of cholesterol within LDL and VLDL particles, while apoB100 reflects the total number of atherogenic apoB lipoprotein particles. These markers provide valuable insights into cardiovascular risk assessment (Sniderman et al., 2011).

Several studies have demonstrated that non-HDL-c is a better predictor of metabolic syndrome characteristics and cardiovascular outcomes compared to LDL-c. In men not using lipid-lowering drugs, non-HDL-c has been identified as the best predictor of changes in the extent of CAD. Moreover, recent posthoc analyses have shown that on-treatment levels of non-HDL-c are more closely associated with cardiovascular outcomes than LDL-c. These findings highlight the diagnostic and prognostic value of non-HDL-c, making it a superior marker for assessing CVD risk (Aggarwal et al., 2021). Considering the overall evidence, the 2019 ESC/EAS guidelines recommend non-HDL-c evaluation for risk assessment, particularly in individuals with high TG levels, diabetes mellitus, obesity, or VLDL-c levels. This recommendation underscores the significance of non-HDL-c measurement in clinical practice (Baba et al., 2023).

Conclusion

This article highlights the significance of non-HDL-c in assessing cardiovascular risk and its utility in clinical practice. Elevated levels of non-HDL-c have been associated with an increased risk of CVD and have been shown to be a superior predictor of CVD risk compared to LDL-c alone. Non-HDL-c encompasses the cholesterol content of all atherogenic lipoprotein fractions, including LDL, VLDL, IDL, and [Lp(a)]. It provides a more comprehensive measure of atherogenic particles and is believed to be superior in capturing residual risk and predicting cardiovascular events.

The estimation of non-HDL-c involves calculating the cholesterol content in all lipoprotein fractions except for HDL-c. Various methods, such as subtracting HDL-c from TC or using advanced techniques like UC or NMR spectroscopy, can be employed to estimate non-HDL-c. The choice of method depends on the available resources and the specific needs of the clinical setting.

International guidelines for CVD prevention have recognized the importance of non-HDL-c and have incorporated it into risk assessment algorithms and treatment strategies. Non-HDL-c is recommended as a secondary therapy target after LDL-c for patients with high TG levels and cardiovascular risk. It is considered a valuable marker in clinical practice, particularly in individuals with hypertriglyceridemia, diabetes, metabolic syndrome, or CKD. Non-HDL-c estimation offers better risk estimation than LDL-c alone and provides additional diagnostic and prognostic information.

Overall, non-HDL-c serves as an integrative marker for assessing cardiovascular risk and has shown promise in improving risk stratification and management of lipid levels. By considering non-HDL-c in addition to LDL-c, healthcare professionals can obtain a more comprehensive assessment of a patient's lipid profile and make informed decisions regarding lipid-lowering therapy.

Conflict of interest: Not declared

References

Aggarwal J, Kathariya MG, Verma PK. 2021 LDL-C, NON-HDL-C and APO-B for cardiovascular risk assessment: looking for the ideal marker. Indian Heart Journal, 73(5):544-8.

Aru V, Lam C, Khakimov B, Hoefsloot HC, Zwanenburg G, Lind MV, Schäfer H, van Duynhoven J, Jacobs DM, Smilde AK, Engelsen SB. 2017. Quantification of lipoprotein profiles by nuclear magnetic resonance spectroscopy and multivariate data analysis. TrAC Trends in Analytical Chemistry, 1;94:210-9.

Baba M, Maris M, Jianu D, Luca CT, Stoian D, Mozoš I. 2023. The Impact of the Blood Lipids Levels on Arterial Stiffness. Journal of Cardiovascular Development and Disease, 16;10(3):127.

Bergmann K. 2010. Non-HDL cholesterol and evaluation of cardiovascular disease risk. Ejifcc, 21(3):64.

Brunner FJ, Waldeyer C, Ojeda F, Salomaa V, Kee F, Sans S, Thorand B, Giampaoli S, Brambilla P, Tunstall-Pedoe H, Moitry M. 2019. Application of non-HDL cholesterol for population-based cardiovascular risk stratification: results from the Multinational Cardiovascular Risk Consortium. The Lancet, 394(10215):2173-83.

Carr SS, Hooper AJ, Sullivan DR, Burnett JR. 2019. Non-HDL-cholesterol and apolipoprotein B compared with LDL-cholesterol in atherosclerotic cardiovascular disease risk assessment. Pathology, 51(2):148-54.

Chung S. 2019. Update on low-density lipoprotein cholesterol quantification. Current opinion in lipidology, 30(4):273-83.

Davidson MH, Pulipati VP. Dyslipidemia: USI. Manual Professional Version. 2022. Available at: https://www.msdmanuals.com/en-in/professional/endocrine-and-metabolic-disorders/lipid-disorders/dyslipidemia# Accessed on 18-Mar-2023

Grundy SM, Stone NJ, Bailey AL, Beam C, Birtcher KK, Blumenthal RS, Braun LT, De Ferranti S, Faiella-Tommasino J, Forman DE, Goldberg R. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA guideline on the management of blood cholesterol: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Jun 18;139(25):e1082-143.

Kones R. 2011. Primary prevention of coronary heart disease: integration of new data, evolving views, revised goals, and role of rosuvastatin in management. A comprehensive survey. Drug Design, Development and Therapy, 13:325-80.

Kunitake ST, Kane JP. 1982. Factors affecting the integrity of high density lipoproteins in the ultracentrifuge. Journal of Lipid Research, 23(6):936-40.

Langlois MR. 2012. Laboratory approaches for predicting and managing the risk of cardiovascular disease: postanalytical opportunities of lipid and lipoprotein testing. Clinical Chemistry and Laboratory Medicine (CCLM), 50(7):1169-81.

Lorenzo C, Williams K, Hunt KJ, Haffner SM. 2007. The National Cholesterol Education Program-Adult Treatment Panel III, International Diabetes Federation and World Health Organization definitions of the metabolic syndrome as predictors of incident cardiovascular disease and diabetes. Diabetes care, 30(1):8-13.

Mach F. 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk (vol 41, pg 111, 2019). European Heart Journal. 2020;41(44):4255.

Nordestgaard BG, Langlois MR, Langsted A, Chapman MJ, Aakre KM, Baum H, Borén J, Bruckert E, Catapano A, Cobbaert C, Collinson P. 2020. Quantifying atherogenic lipoproteins for lipid-lowering strategies: consensus-based recommendations from EAS and EFLM. Atherosclerosis, 294:46-61.

Packard CJ. 2022. Remnants, LDL, and the quantification of lipoprotein-associated risk in atherosclerotic cardiovascular disease. Current Atherosclerosis Reports, 24(3):133-42.

Redgrave TG, Roberts DC, West CE. 1975. Separation of plasma lipoproteins by density-gradient ultracentrifugation. Analytical biochemistry, 65(1-2):42-9.

15. Capasso, F. (1994). The role of the gut in ricinoleic acid-induced diarrhoea in rats: involvement of 5-HT3 receptors. British Journal of Pharmacology, 111(2), 515-518.
16. Scalbert, A. (1991). Antimicrobial properties of tannins. Phytochemistry, 30(12), 3875-3883.
17. Lacy, B. E., & Levy, L. C. (2007). Lubiprostone: a novel treatment for chronic constipation. Clinical Interventions in Aging, 2(3), 419-424.
18. Golandaz G, Pal A, Vaibhav Uplanchiwar, Rupesh Gautam. A *Butea Monosperma* flower partially reduces high fat diet induced obesity in experimental rats. Obesity Medicine, 17(2020) 100179. doi: https://doi.org/10.1016/j.obmed.2019.100179
19. Vaibhav Uplanchiwar, M.K. Gupta, Rupesh K. Gautam. Memory enhancing effect of various polar and non polar extracts of Plumbago Zeylanica Linn. Roots. International Journal of Green Pharmacy, Jan-June 2018 (Suppl).12 (1).
20. Devhare, L. D., Ghugare, A. P., & Hatwar, B. P. (2015). Method development for determination of water content from various materials by spectrophotometry and it's validation. International journal of drug delivery, 7(4), 233-240.
21. Devhare, L. D., & Kore, P. K. (2016). A recent review on bioavailability and solubility enhancement of poorly soluble drugs by physical and chemical modifications. Research chronicle in health sciences, 2(5), 299-308.
22. Tonde, T. U., Kasliwal, R. H., & Devhare, L. D. (2016). Quantitative Estimation of Bacoside A in Polyherbal Memory Enhancer Syrup for Memory Boosting Activity Using HPTLC Method. Research Chronicle in Health Sciences, 2(6), 315-320.
23. Ghugare, A. P., Devhare, L. D., & Hatwar, B. P. (2016) Development and validation of analytical methods for the simultaneous estimation of Nimorazole and Ofloxacin in tablet dosage form. 8(3), 96-98.
24. Salpe, H. G., Devhare, L. D., Ghugare, A. P., & Singh, N. (2016). Formulation and evaluation of hpmc coated diltiazem hcl tablet and its comparison with other marketed preparation. Research chronicle in health sciences. 3(1), 11-17
25. Makhani, A. A., & Devhare, L. D. (2017). Development and validation of vierordt's spectrophotometric method for simultaneous estimation of Drotaverine and Nimesulide combination. Research chronicle in health sciences, 3(2), 22-28.

26. Makhani, A. A., & Devhare, L. D. (2017). Development and Validation of Analytical Methods for Drotaverine and Nimesulide Combination. Research Chronicle in Health Sciences, 3(3), 40-44.
27. Katole, G., & Devhare, L. D. (2020). Recent insight into some emerging natural resources with remarkable hepato protective potentials. International journal of pharmaceutical science and research, 5(1), 41-47.
28. Uplanchiwar, V. P., Raut, S. Y., & Devhare, L. D. (2021). Pharmacological assessment of antiulcer activity of gloriosa superba linn tubers in experimentally induced gastric ulcers. Journal of medical pharmaceutical and allied science, 10(3), 2852-2856.
29. Devhare, L. D., & Gokhale, N. (2021). Acid neutralizing capacity and antimicrobial potential of selected solvent extract from various indigenous plants. Journal of Advanced Scientific Research, 12(04), 175-179.
30. Devhare, L. D., & Gokhale, N. (2022). Antioxidant and Antiulcer property of different solvent extracts of Cassia tora Linn. Research Journal of Pharmacy and Technology, 15(3), 1109-1113.
31. Devhare, L. D., & Gokhale, N. (2023). In silico anti-ulcerative activity evaluation of some bioactive compound from Cassia tora and Butea monosperma through moleculer docking approach. International journal of pharmaceutical sciences and research, 14(2), 1000-1008.
32. Devhare, L. D., & Gokhale, N. (2023). A brief review on: phytochemical and antiulcer properties of plants (fabaceae family) used by tribal people of gadchiroli maharashtra. International journal of pharmaceutical sciences and research, 14(4), 1572-1593.
33. Nikam N, R., Vaishnavi, A., & Devhare, L. D. (2023). Parenteral drug delivery approach: an overview. Journal of xidian university, 17(1), 386-400.
34. Shende, S. M., Bhandare, P., & Devhare, L. D. (2023). In-vitro: micropropagation of mint and investigate the antibacterial activity of mint extract. Eur. Chem. Bull, 12(5), 780-784.

35. Bodhankar, S. S., Devhare, L. D., Meshram, A. S., Moharkar, D. W., & Badwaik, C. B. (2023). Formulation and in vitro evaluation of dental gel containing ethanolic extract of Mimosa pudica. European Chemical Bulletin, 12(5), 1293-1299.
36. Devhare, L. D., Bodhankar, S. S., Warambhe, P., Uppalwar, S. V. Uchibagle, S., & Shende, S. M. (2023). Important role of food and nutritional security during Covid-19: A survey. European Chemical Bulletin. 12(5), 1363-1374.
37. Pathak, N. R., Devhare, L. D., Sawarkar, K. R., Dubey, M., Trivedi, V., Thakre, A. R., & Thakare, V. M. (2023). Aclinial reveiew on pharmacological evaluation of Thiazolidine and Isatin in the new millenium as magic moieties. European Chemical Bulletin. 12(5), 3410-3417.
38. Singh, S., Minj, K. H., Devhare, L. D., Uppalwar, S. V., Anand, S., Suman, A., & Devhare, D. L. (2023). An update on morphology, mechanism, lethality, and management of dhatura poisoning. European Chemical Bulletin. 12(5), 3418-3426.
39. Suruse, P. B., Jadhav, B. A., Barde, L. G., Devhare, L. D., Singh, S., Minj, K. H., & Suman, A. (2023). Exploring the potential of Aerva Lanata extract in a herbal ointment for fungal infection treatment. Journal of Survey in Fisheries Sciences. 10(1), 1922-1932.
40. Shende, S. M., Meshram, B., Karemore, H., & Devhare, L. D. (2023). Development And Characterization of Glycerogelatin Suppositories For Enhanced Efficacy. European Journal of Pharmaceutical and Medical Research. 10(6), 522-528.
41. Thakare, V. M., Umare, S. A., & Devhare, L. D. (2023). Separation and purification of carboxymethyl cellulose from Spinacia Oleracea for use in pharmaceutical dosage form. European Chemical Bulletin. 12(5), 4062-4080.
42. Suruse, P. B., Deshmukh, A. P., Barde, L. G., Devhare, L. D., Maurya, V. K., Deva, V., & Priya, N. S. (2023). Rimegepant embedded fast dissolving films: A novel approach for enhanced migraine relief. Journal of Survey in Fisheries Sciences, 10(1) 2071-2084.
43. Prasad, M., Suman, A., Srivastava, S., Khosla, G., Deshmukh, A., Devhare, L. D., & Meshram, S. S. Butea monosperma stem bark extract partially reverses high fat diet-induced obesity in rats. European Chemical Bulletin. 12(5), 4267 - 4273.

44. Shukla, M., Tiware, S. A., Desai, S. R., Kumbhar, S. T., Khan, M. S., Mavai, Y., & Devhare, L. D. (2023). Pharmacological Evaluation of Gloriosa Superba Linn Flower Extract For Antiulcer Activity. Journal of Survey in Fisheries Sciences. 10(2) 463-470.
45. Polireddy, P., Malviya, V., & Devhare, L. D. (2023). Assessment of Hepatoprotective Potential of Ecbolium Linneanum Extract on Experimental Animals. Journal of Coastal Life Medicine. 2(11) 884-890
46. Devhare, L. D., Hiradeve, S. M., & Bobade, T. (2017). Method Development & Validation For Determination of Water Content. LAP LAMBERT Academic Publishing.
47. Shukla, M., Tiware, S. A., Desai, S. R., Kumbhar, S. T., Khan, M. S., Mavai, Y., & Devhare, L. D. (2023). Pharmacological Evaluation of Gloriosa Superba Linn Flower Extract For Antiulcer Activity. Journal of Survey in Fisheries Sciences, 10(2) 463-470.
48. Polireddy, P., Malviya, V., Arora, S., Singh, M., Pooja Tanaji, G., Devhare, L. D. & Dharmamoorthy, G. (2023). Assessment of Hepatoprotective Potential of Ecbolium Linneanum Extract on Experimental Animals. Journal of Coastal Life Medicine, 11(2) 884-890.
49. Singh, M., Malik, A., Devhare, D. L., Ruikar, D. B., Krishnan, K. Kumar, D. V. & Devnani, D. (2023). Comparative Case Study on Tuberculosis Patients Between Rural And Urban Areas. Journal of Survey in Fisheries Sciences, 10(2) 622-632.
50. Devhare, L. D., Kumbhar, S. T., Chitrapu, P., Kundral, S., & Borkar, A. A. (2023) In-Silico Molecular Docking Study of Substituted Imidazo 1, 3, 4 Thiadiazole Derivatives: Synthesis, Characterization, and Investigation of their Anti-Cancer Activity. Journal of Coastal Life Medicine, 11(2) 1237-1245.
51. Thakre, S. M., Kumar, D. V., Ahuja, A., Hamid, N., Thakre, A. R., Khan M. S., & Devhare, D. L. (2023). Exploring the Influence of an Antifungal Medication on Patients Receiving Oral Hypoglycemic Therapy: Investigating the Interplay Between Medications. Journal of Coastal Life Medicine, 11(2) 1255-1262.
52. Devhare, L. D., Katole, G. (2018) Diluent and granulation study on Metformin Hydrochoride. LAP LAMBERT Academic Publishing.

53. Krishna KVVS, Jain PK, Devhare LD, Sharma RK. A Study on Antidiabetic Potential of Dried Fruits Extract of Eucalyptus Globulus in Experimental Animals. Journal of Biomedical Engineering 2023, 40(3), 99-110

54. Tiwari R, Mishra J, Devhare LD, Tiwari G. PharmaAn Updated Review on Recent Developments and Appli-Cations of Fish Collagen. Pharma Times 2023, 55(6), 28-36

AN UPDATE ON MORPHOLOGY, MECHANISM, LETHALITY, AND MANAGEMENT OF DHATURA POISONING

Shailja Singh[1]*, Kimee Hiuna Minj[2], Lalchand D Devhare[3], Sonali V Uppalwar[4], Sneha Anand[5], Dr. Abhishek Suman[6], Dr. Dhammshila L Devhare[7]

Article History: **Received: 28.03.2023** **Revised: 20.04.2023** **Accepted: 11.05.2023**

Abstract

Dhatura is a part of the Solanaceae family and belongs to the genus Datura, which is thought to have both poisonous and therapeutic characteristics due to the diverse variety of bioactive ingredients. The Dhatura plant's common names are thorns apple and Jimson Weed, mad apple, and moonflower. Plants are used to cure a variety of human diseases. Alkaloids, sugars, cardiac glycosides, tannins, flavonoids, amino acids, and phenolic substances were identified in the preliminary phytochemical analysis of the Datura plant extract. Additionally, it contains dangerous tropane alkaloids like hyoscyamine, atropine, and scopolamine. Even while some research on D. stramonium has suggested possible pharmacological effects, the toxicity of the organism is still mostly unknown. Additionally, toxic symptoms have been brought on by the regular misuse of D. stramonium for recreational purposes. Therefore, its use's harmful effects and potential hazards must be understood. This paper aims to provide an overview of the plant Datura's, phytochemical makeup, pharmacological properties, toxicological properties, and treatment of Dhatura poisoning.

Keywords: Dhatura, toxic, Alkaloids, toxicological properties.

[1]*,[2]Department of forensic sciences, School of Sciences, ITM University, Jhansi Road, Turari, Gwalior.
[1]Email Id: shailjasingh.sos@itmuniversity.ac.in, [1]ORCHID ID: 0000-0002-6425-1699
[3]School of Pharmacy, G H Raisoni University, Saikheda. ORCHID ID: 0000-0003-0579-4949
[4]Ideal Institute of Pharmacy, Palghar.
[5]Gurugram Global College of Pharmacy.
[6]Government Pharmacy Institute, Patna, Bihar.
[7]NRHM, HWC Nandagomukh, Nagpur.

***Corresponding author:** Shailja Singh
*Department of forensic sciences, School of Sciences, ITM University, Jhansi Turari, Gwalior.
Email Id: shailjasingh.sos@itmuniversity.ac.in, ORCHID ID: 0000-0002-6425-1699

DOI: 10.48047/ecb/2023.12.si5a.0230

INTRODUCTION

Dhatura is a biennial plant that occur wild throughout the nation, particularly in wastelands. It is a tiny, rough Solanaceae family shrub with a foul odor. According to its etymology, the word "Dhatura" comes from the Sanskrit word "Dhatur". The names thorn apple, jimson weed, hell's bell, and devil's trumpet are also used to refer to Dhatura. It is categorized as a brain toxin of the deliriant kind in contemporary medicine. Atropine, hyoscyamine, scopolamine, and other deadly tropane alkaloids found in the plant are what give it its therapeutic and hallucinogenic effects. They are also toxic when consumed in large doses. The plant has been categorized under class E1 of the Drug and Cosmetics Act of 1940[1]. According to Ayurveda, Dhatura is a helpful treatment for several human illnesses, such as dysmenorrhea, neuralgia, edema, wounds, inflammations, fever, and dyspnea. In India, datura poisoning is typical since the seeds are frequently used as a narcotic before robberies, kidnappings, and rapes. It is occasionally referred to as roadside poison. Inappropriate Dhatura dosages hurt the central nervous system, causing symptoms like hallucinations, seizures, memory loss, trouble swallowing, and disorientation. Although Dhatura poisoning seldom results in death, Because this plant can have both therapeutic and toxic effects on people, it must only be used under proper supervision. All plant parts are poisonous, however mature seeds have the largest concentration of alkaloids[11].

DISTRIBUTION

The Datura species are found all over the world. The plant can be found on plains and sandy flats. It's unclear where Datura Stramonium came from. The general name of Jimson weed is derived from the Sanskrit datura and the Hindustani dhatur; it may have Asian origins. Due to Datura's presence across the majority of temperate and subtropical regions of the planet, some authors claim that it is likely to have a Central American origin. It is native to India and is a prolific grower from Kashmir to Sikkim in the Himalayas. It is spread throughout the hills and valleys of Manipur as a wild plant. It is typically grown in Manipur from April to October[34].

Toxic Parts[4]: The root, fruit, seed, flower, leaves, and even the nectar of the plant is poisonous.

Fatal Dose: Approximately 60–100 Datura seeds.

Fatal Dose: 24 hours

Action[5]

- Atropine and hyoscine, which have sympathomimetic or parasympatholytic actions, block the acetylcholine receptor.
- It first accelerates the central nervous system, but later causes CNS depression, especially in the respiratory center.
- It also has a vagolytic effect that stimulates the heart.

Botanical Description[2]

Dhatura is an annual plant and the length of Dhatura plant is up to 150 cm (6 feet) tall and has a pungent odor.

Root: cylindrical, brown, rough-splintered, with lateral branches.

Stem: Cylindrical, dichotomously branched, blackish-purple to dark purple in color, with a very short internode.

Leaf: alternately arranged, with a pointed border, and a dark green color.

Flowers: have bell or trumpet shapes.

Fruit: A globular, soft-spined capsule that contains light-brown seeds.

Seed: flattened, foveate, surface finely pitted, color similar to chili pepper seeds.

Biochemical Composition of Dhatura

Datura generally contains sizeable levels of ash content, moisture, lipids, protein, carbs, and crude fifiber Alkaloids, phenolic compounds, tannins, flavonoids, and cardiac glycosides are additional important phytochemicals discovered in Datura[12]. Additionally, various amino acids have been extracted from the seeds, including alanine, phenylalanine, glutamate, and tyrosine [13]. Along with hyoscyamine and atropine, hyoscine [Scopolamine] is the main tropane alkaloid with varying concentrations in various plant parts[14]. Hyoscyamine levels in seeds and flowers were found to be 0.426% and 0.43%, respectively, whereas atropine levels in Datura leaves were found to be 0.426%. As the D. metal plant goes through various growth stages, its alkaloid content of scopolamine and atropine gradually increases, reaching a climax when the plant completes its reproductive cycle[15]. In D. stramonium, the highest concentrations of alkaloids were discovered ten weeks after seed germination and progressively decreased as the generative phase of plants began[16]. The alkaloid percentage often changes according to the plant part and growth stage. For instance, alkaloid concentration in leaves reaches its peak during the vegetative phase before rapidly declining during the generative phase[17]. Young plants have substantial amounts of hyoscyamine in their stems and leaves. However, various plant sections in young and adult plants have varying quantities of atropine and scopolamine[18].

Pharmacological Activity of *Datura*

Datura is recognized for having narcotic, anti-inflammatory, anticancer, and antibacterial effects. Particularly because of its powerful analgesic properties, D. metal works well as a pain reliever[19]. Muscarinic antagonists such as atropine and scopolamine may be used to treat parasympathetic stimulation of the ocular, respiratory, urinary, cardiac, and gastrointestinal tracts[20]. They stop parasympathetic nerve impulses by limiting the neurotransmitter acetylcholine's ability to connect to the receptor on nerve cells [21]. The primary anti-asthmatic medication, atropine, causes the pulmonary branches of the lungs to paralyze, eliminating the lung spasms that cause asthma attacks[22]. The practice of inhaling Datura leaves through a pipe to treat allergies has its roots in Indian traditional ayurveda treatment. Because of its anticholinergic effects, D. stramonium is primarily used recreationally[23]. It is made by boiling crushed seeds. But when the fetus is exposed to D. stramonium, acetylcholine is released continuously, desensitizing nicotinic receptors and causing lifelong harm to the fetus[24].

Phytochemistry of Dhatura

The entire Datura plant contains a wide variety of alkaloids, gradually growing with the aging process [31]. Numerous withanolides, several tropane alkaloids, and numerous trigloyl esters of tropine and pseudo tropine are the major components of the datura plant. These include hyoscyamine, hyoscine, littorine, acetoxytropine, valtropine, fastusine, and fastusinine. Numerous Datura species also contain calystegines and nortropane alkaloids with glycosidase inhibitory action [32] Atropine is present in greater concentrations in the root than in the other components. When compared to the plant's root, the aerial sections typically collected higher proportions of scopolamine and smaller proportions of atropine[31].

Pharmacognosy

Datura stramonium L. is a plant that is extensively grown and is well known for having tremendous pharmacological potential as well as great utility and employment in traditional medicine. Due to its analgesic and antitiasmic properties, it contains alkaloids, tannins, carbohydrates, and proteins[6]. The treatment of asthma using leaves[61]. In tests using a hot plate and formalin, datura stramonium seed extract significantly reduced both acute and chronic pain. This effect is most likely caused by an alkaloid that interacts with the opioid system[62]. The entire plant is dangerous, but the foliage and seeds are in particular. The anticholinergic syndrome is brought on by the inhibition of both central and peripheral muscarinic neurotransmission. Some of the patient's symptoms include dryness of the skin and mucosa, flushing, blurred vision, and light sensitivity, urine retention, and myoclonic jerks. Other symptoms that may be present include tremors, poor short-term memory, disorganized behavior, hallucinations, mental illness, coma, respiratory failure, and circulatory collapse.

Datura stramonium leaf extract has antimicrobial properties. Excellent antifungal activity was reported in the leaf extract of Datura stramonium L. When a mother consumes this plant to treat her asthma throughout pregnancy, the fetus will be exposed to it and this will result in a continuous release of Ach, which will desensitize nicotinic receptors and may ultimately cause irreparable damage to the fetus. Jimsonweed seeds had three main effects: reduced body weight growth, serum alkaline phosphatase, and blood urea nitrogen[63]. All plant components are poisonous, however mature seeds have the largest concentration of alkaloids[64]. They function at the peripheral and central muscarinic receptor sites as a competitive antagonist of acetylcholine[65]. As a result of poisoning, many organs with parasympathetic innervation become paralyzed[66]. Cytotoxicity and oxidative stress were brought on by datura aqueous leaf extract in human cancer cell lines. Although mortality is rare, severe toxicity has been linked to unconsciousness and seizures[67].

Compounds obtained from Datura metel

There are a lot of important secondary metabolites that could be found in plants. It may be possible to discover bioactive substitutes for synthetic chemicals by studying useful secondary metabolites that have been identified from medicinal plants.

Several alkaloids from Datura species have been reported, including hyoscine, hyoscyamine, meteloidine, scopolamine, tigloidine, tropine, withametelline, and datumetine, among others[29]. Some of these alkaloids have been used in medicine.

Traditional Uses[4]

Several disorders can be treated with Datura, including breathing problems, fever, coughing, inflammations, swelling, headaches, madness, fatigue, hyperacidity, kidney failure, calculi, and menstrual cramps. The entire plant has therapeutic use, but the roots are particularly useful for treating rabid dog attacks. The leaf is helpful for piles and

inflammations. Lice and skin conditions are treated externally using leaf juice. It is also used to treat dandruff and lice, as well as for tooth and earaches, and stomach issues, and as an aphrodisiac.

Biological Function

Insecticide Action

Many authors have researched the insecticidal and repellant qualities of the Datura species.. In contact and spray application trials, It has been demonstrated that D. metel leaf extracts have insecticidal and repellent properties for a number of insect species. Organic extracts of D. metel revealed EC50 values of 12,000 ppm for grasshoppers and 11,600 ppm for red ants[33]. Pesticide action has been evaluated in non-polar extracts from adult individuals and larvae of different insects, both by touch and by feeding, in the case of D. stramonium[35]. When evaluated on two mosquito species, D. stramonium aqueous root extract was found to have a larvicidal efficiency of between 50% and 100% 24 hours after treatment at a 100% concentration of the extracts[38]. It has been demonstrated that various concentrations of an aqueous extract of D. stramonium leaves and seeds are efficient against flea beetles, a typical maize pest[36] . The enzymes acetylcholinesterase, carboxylesterase, acid phosphatases, and alkaline phosphatases (ALP) were also discovered to be inhibited in test subjects who survived the toxicity when Datura inoxia acetone extracts were tested for toxicity against Tribolium castaneum, Trogoderma granarium, and Sitophilus granaries[36].

Herbicide Action

When evaluated on two mosquito species, D. stramonium aqueous root extract was found to have a larvicidal efficiency of between 50% and 100% 24 hours after treatment at a 100% concentration of the extracts[38]. Flea beetles, a frequent pest of maize, can be defeated using various concentrations of an aqueous extract of D. stramonium leaves and seeds[36]. Datura inoxia acetone extracts were also discovered to inhibit the enzymes acetylcholinesterase, carboxylesterase, acid phosphatases, and alkaline phosphatases (ALP) in test subjects who survived the toxicity against Tribolium castaneum, Trogoderma granarium, and Sitophilus granarius[36].

Acaricide Activity

The methanolic preparations of D. stramonium leaves and seeds killed adult Tetranychus urticae Koch (spider mites) in 98% and 25% of instances, respectively. For leaf extracts but not seed extracts, there was a direct link between concentration and death rate[39]. In adult mite immersion tests, an ethanolic preparation made from Datura stramonium leaves resulted in 20% mortality against Rhipicephalus microplus (Asian blue tick)[40]. The D. stramonium methanolic extract dramatically decreased Rhipicephalus (Boophilus) microplus oviposition by 77%, according to in vitro research[41] .

Antifungal Activity

D. discolor, D. metel, and D. stramonium, three species of the genus, were examined for antifungal potential. In order to inhibit the growth of Aspergillus flavus, Aspergillus niger, Penicillium chrysogenum, Penicillium expansum, Fusarium moniliforme, and Fusarium poae, ethanolic and methanolic extracts from D. discolor stems and leaves were mixed with culture medium[42]. Aqueous and methanolic extracts of the leaves of D. metel suppressed the growth of Rhizoctonia solani. The methanolic extract of D. metel was up to 35% more toxic than that of the other 15 species under investigation, inhibiting mycelial growth and being utilized in the synthesis of sclerotium in both agriculture and medicine as a herbicide, an acaricide, and an insecticide[43]. A. fumigatus, A. niger, and A. flavus were all susceptible to the antifungal effects of extracts of D. metel in different solvents , with the chloroform fraction having the lowest inhibitory concentration (MIC) of 625.0 g/mL[43]. To evaluate the antifungal effects of methanol extracts from the leaves, seeds, stems, and roots of D. inoxia, A. flavus, A. niger, Alternaria solani, Fusarium solani, and Helianthus sporium were utilized[44]. Aqueous extracts of D. stramonium demonstrated the highest antifungal activity against Candida albicans (74%), whereas methanol and chloroform extracts had good inhibitory activities (69% and 65%, respectively)[45].

Antibacterial Activity

Five harmful bacteria were evaluated using D. stramonium leaf and fruit extracts with varied polarity solvents, and all tested pathogens showed growth inhibition at various doses when the extracts of methanol and chloroform from both leaves and fruits were used. All separated fruit components effectively slowed the development of Klebsiella pneumonia and Pseudomonas aeruginosa. The highest level of growth inhibition (77%) against K. pneumonia was seen in the chloroform extract of leaves[45]. The antibiotic activity of methanolic extracts (80%) of Datura inoxia against Bacillus subtilis, Staphylococcus aureus, and Escherichia coli was assessed using the paper disc diffusion method with ampicillin as a positive control. The outcomes demonstrated

action against all bacteria at the highest concentration of the extracts, except E. coli (2.5 g/mL)[46]. However, methanolic, ethanolic, and aqueous extracts of D. stramonium showed antibacterial efficacy against gram-positive and gram-negative bacteria in the paper disc diffusion method. The growth of bacteria in P. aeruginosa, K. pneumonia, and E. coli was suppressed by an ethanolic extract of leaves at a minimum inhibitory concentration of 25% w/v[47]. The methanolic leaf extract demonstrated antibacterial activity against both gram-positive and gram-negative bacteria at concentrations of 2.5, 1.25, and 0.75 mg/mL, including Staphylococcus haemolyticus, S. aureus, Shigella dysenteriae, and Bacillus cereus[47, 71].

Anti-Oxidant Activity

The antioxidant activity of D. metal stem, root, and leaf aqueous extracts ranged from 23.8 to 49.3% [48]. For the radicals, DPPH, superoxide, and radical cation ABTS, the IC50 values for the methanolic extract of D. stramonium were 35.3, 10.5, and 49.36 g/mL, respectively [49]. The antioxidant capacity, phenolic component, flavonoid concentrations, and increased antioxidant capacity (221.25 1.06 mg EPA/g) were compared to D. metel and found to be considerably higher in D. innoxia [52]. In a DPPH purification test against various solvents and plant parts, D.. metel leaf methanol extract displayed the highest antioxidant capability since it has the highest concentrations of flavonoids and tannins among phenolic compounds [51,72].

Hypoglycemic Activity

Adding pulverized D. metal seeds to the diet of diabetic rats caused a significant drop in blood glucose levels after 8 hours, which was used to explore the hypoglycemic action of the seeds [52]. Despite a hydroethanolic extract of D. stramonium root was examined in diabetic mice and found to have no discernible hypoglycemic effect, diabetic mice that were orally loaded with the extract at relatively high doses (100, 200, and 400 mg/kg) experienced noticeably lower blood glucose levels [53]. D. inoxia's methanolic leaf extract demonstrated antihyperglycemic effects on the enzymes -glucosidase, -amylase, lipase, and urease [54].

Cytotoxic Activity

When D. metel flower ethanolic extract was examined on cancer cell lines, it was discovered that the A549 (tongue), BGC-823 (gastric), and K562 (leukaemia) cell lines were all cytotoxic [57]. Similar to this, Datura stramonium seed methanolic extracts were discovered to have 66.84 percent cytotoxicity against MCF7 (breast cancer) cells at a concentration of 599 g/mL [19]. These results were consistent with those of Gupta et al. [56] who examined the cytotoxic effects of methanolic extracts of D. stramonium leaves on A549 and MCF7 cells and discovered significant immunological activation [57]. With an IC50 of 93.73 g/mL, the methanolic leaf extract of D. innoxia indicated a potentially lethal effect on MCF-7 human breast cancer cell lines [52].

When tested against human colon cancer cells, HCT 15, Rhinoxia B, a phytosterol isolated from D. inoxia leaf extracts, was reported to have antiproliferative action with an IC50 of 4 M [56].

Other Activity

Due to the presence of tropane alkaloids, datura has aphrodisiac, anaesthetic, analgesic, sedative-hypnotic, and anticholinergic (mydriatic, antispasmodic) properties. The activities of tropane alkaloids are mediated by a competitive muscarinic receptor antagonist. On the other hand, a few tropane alkaloids and derivatives have shown varying affinities to the nicotinic acetylcholine receptor, albeit to a smaller degree, and are occasionally partial agonists [58]. Because tropane alkaloids have various degrees of affinity for monoaminergic transporters, their effects on the nervous system are likewise related to the function of monoaminergic neurotransmitters [59].

Clinical (Toxic) Features[7]

The nine Ds represent the main symptoms of Dhatura poisoning.

1. Mouth dryness, thirst
2. Difficulty in swallowing
3. Wide-open pupils
4. Double Vision
5. Hyperpyrexia and dry hot skin.
6. Ataxic drunken gait, hyperthermia, and convulsions.
7. Delirium accompanied by agitation, forgetfulness, incoherence, and hallucinations.
8. Distension of the bladder, urinary retention, and dysuria
9. Rapid heart beat, arrhythmias, coma, and respiratory depression before death

Hyperthermia and sinus tachycardia are frequent symptoms. Other frequent results include mydriasis and loss of near-vision accommodation. Eye contact can significantly enlarge the pupils and affect other systemic aspects. This might be done by coming into contact with dried and ground materials handled alongside crops by combine harvesters or through plant sap after handling the plants directly (corn-pickers eye)[25]. In one instance, accidental ocular instillation of Datura

plant sap led to the development of unilateral mydriasis in seven patients. Additionally, three of the patients had ipsilateral cycloplegia. Within a week of exposure, all individuals with these signs recovered [26].

Datura poisoning is frequently accompanied by symptoms including dry mouth, impaired GI motility, and loss of bowel noises. Swallowing becomes challenging, and speech may be difficult to understand. It may be necessary to catheterize if there is frequent urinary retention and bladder distention[27]. Some cases of hypertension have been documented. Following the consumption of Datura seeds, tachypnea with or without breathing difficulties has been seen[28]. In one instance, a young boy who consumed Datura seeds experienced acute respiratory distress syndrome that led to respiratory failure, and he eventually passed away from refractory hypoxemia [29]. Ataxia, psychosis, agitation, hostility, visual and auditory hallucinations, speech abnormalities, convulsions, myoclonus, and hypertonia are a few of the central nervous system (CNS) consequences [30].

Treatment of Dhatura Poisoning[8]

Monitoring of pulse, respiration, and body temperature, Hysostigmine 1-4 mg i.v./i.m., $KMnO_4$ or 4–5% tannic acid for stomach washing (repeated, if necessary at intervals of 1-2 hrs.) Pilocarpine 5 mg subcutaneous, and Neostigmine 2.5 mg i.v. every three hours.

Ayurvedic Antidotes[9]: Cow milk with sugar, one pal's worth of juice from the Vrintaka fruit, Karpasasthi Pushpa Kwath, Nimbu Swarasa, and Jirka.

Postmortem Finding[10]: The enlarged pupil is a symptom of asphyxia general poisoning symptoms, The stomach, and small intestines may contain seeds or fragments. It doesn't rot and can even be found in a decomposing body.

References

1. Anonymous. Schedule E-I Of Drug and Cosmetic Act1940 And Rules- 1945, List Of Poisonous Substances Under Ayurveda System Of Medicine, Government Of India, New Delhi.
2. API, Part-1 Vol.4, First Edition, 2004, Govt. Of India Ministry of Health and Family Welfare Department of Ayush New Delhi
3. Dr. J.L.N. Sastry, Illustrated Dravyguna Vijana, Vol.2, Chaukhambha Orientalia Varanasi, Reprint Ed. 2016, P.384
4. P.C. Sharma, Database on Medicinal Plants Used in Ayurveda, Volume 2, CCRAS, New Delhi2005, Pg. 201
5. Gautam Biswas. Review of Forensic Medicine and Toxicology. 4th Ed. Jaypee Brothers Medical Publisher;2019.
6. Soni P, Siddiqui AA, Dwivedi J, Soni V Pharmacological properties of Datura stramonium L. as a potential medicinal tree An Overview. Asian Pac J Trop Biomed.2012
7. V. V. Pillay. Modern Medical Toxicology. 4th ed. Jaypee Brothers Medical Publisher.2013.
8. Dr. Sharad Porte. Agada Tantra Visha Chikitsa Vijana, 1 st Ed.2016 Ch. 12, P.162
9. Dr. K.S. Narayan Reddy. The Essential of Forensic Medicine & Toxicology. 34th Ed Jaypee The Health Science Publisher New Delhi.2017.
10. VV Pillay. Textbook of Forensic Medicine & Toxicology.18th Ed. Paras Medical Publishers .2017.
11. Miraldi E, Masti A, Ferri S, Barni Comparini I (2001). Distribution of hyoscyamine and scopolamine in Datura stramonium. Fitoterap., 72: 644-648
12. Bagewadi Z.K Muddapur U.M, Madiwal S.S, Mulla S.I. Khan A. Biochemical and Enzyme Inhibitory Attributes of Methanolic Leaf Extract of Datura metaloxia Mill. Environ Sustain. **2019**: 2: 75--87.
13. Snafi A.E. Medical Importance of Datura fastuosa (Syn: Datura metel) and Datura stramonium – A Review IOSR J. Pharm. **2017**: 7: 43--58
14. Nayyar M.S. Hanif M.A Majeed M.I, Ayub M.A, Rehman R Datura In Medicinal Plants of South Asia. Elsevier: Amsterdam, The Netherlands 2020: 207 -216.
15. Nandakumar A, Vaganan M.M, Sundararaju P, Udayakumar R Phytochemical Analysis and Nematicidal Activity of Ethanolic Leaf Extracts of Datura metal Datura Innoxia and Brugmansia suaveolens against Meloidogyne incognita. Asian J. Biol. **2017**: 2: 1-11.
16. Al-Snafi A.E. Medicinal Plants Alkaloids as Promising Therapeutics-A Review. IOSR J Pharm. **2021**: 11: 51-67
17. Oseni O.A, Olarinoye C.O, Amoo I.A. Studies on Chemical Compositions and Functional Properties of Thorn Apple (Datura stramonium L.) Solanaceae Afr. J. Food Sci. **2010**, 5: 40-44.
18. Devi M.R, Bawari M, Paul S B, Sharma G D Neurotoxic and Medicinal Properties of Datura stramonium L. Review Assam Univ. J. Sci Technol. **2011**: 7: 139-144.

19. Maheshwari N.O, Khan A, Chopade B.A. Rediscovering the Medicinal Properties of Datura A Review. J. Med. Plants Res. **2013**; 7: 2885–2897.
20. Roy S, Samant L, Ganjhu R, Mukherjee S, Chowdhary A. Assessment of in Vivo Antiviral Potential of Datura metel Linn. Extracts against Rabies Virus. Pharmacogn. Res. **2018** ; 10: 109
21. Lalchand D. Devhare and Niharika Gokhale. In silico anti-ulcerative activity evaluation of some bioactive compound from cassia tora and butea monosperma through molecular docking approach. International journal of pharmaceutical sciences and research. 2023, 14(2), 1000-08.
22. Hameed Baloch I.A.; Hanif-ur-Rehman, I.A.B. Review Article on Poisonous Plants of Balochistan. Balochistaniyat **2017**, 6, 36–56.
23. Soni, P.; Siddiqui, A.A.; Dwivedi, J.; Soni, V. Pharmacological Properties of Datura stramonium L. as a Potential Medicinal Tree: An Overview. Asian Pac. J. Trop. Biomed. **2012**, 2, 1002–1008
24. Gaire, B.P.; Subedi, L. A Review on the Pharmacological and Toxicological Aspects of Datura stramonium L. J. Integr. Med. **2013**, 11, 73–79
25. Krenzelok EP. Aspects of Datura poisoning and treatment. Clin . Toxicol (Phila) 2010; 48(2):104–110.
26. Andreola B, Piovan A, Da Dalt L, Filippini R, Cappelletti E. Unilateral mydriasis due to Angel's trumpet. Clin Toxicol (Phila) 2008; 46(4):329–331
27. Isbister GK, Oakley P, Dawson AH, Whyte IM. Presumed Angel's trumpet (Brugmansia) poisoning: clinical effects and epidemiology. Emerg Med. 2003; 15(4):376–382.
28. Vanderhoff BT, Mosser KH. Jimson weed toxicity: management of anticholinergic plant ingestion. Am Fam Physician. 1992;46(2):526–530
29. Thabet H, Brahmi N, Amamou M, Ben Salah N, Hédhili A, Yacoub M. Datura stramonium poisonings in humans. Vet Human Toxicol. 1999;41(5):320–321.
30. Francis PD, Clarke CF. Angel trumpet lily poisoning in five adolescents: clinical findings and management. J Paediatr Child Health. 1999; 35(1):93–95.
31. Afsharypuor S, Mostajeran A., and Mokhtary R . Variation of scopolamine and atropine in different parts of Datura metel during development. Planta Med.1995; 61: 383–384.
32. Ghani A . Medicinal Plants of Bangladesh with chemical constituents and uses.American Journal of plant science.4(11):1-6.
33. Singh HB, Singh RS, Sandhu IS. Herbal Medicine of Manipur. A Colour Encyclopaedia, Daya Publishing House, Delhi. 2003; 15.
34. Ali A, Ahmad F, Biondi A, Wang Y, Desneux N. Potential for using Datura alba leaf extracts against two major stored grain pests, the khapra beetle Trogoderma granarium and the rice weevil Sitophillus oryzae. Journal of Pest Science. 2012; 85(3):359-366.
35. Maheshwari NO, Khan A, Chopade BA Rediscovering the medicinal properties of Datura sp.: A review. Journal of Medicinal Plants Research. 2013; 7(39):2885-2897.
36. Sakadzo N, Pahla I, Muzemu S, Mandumbu R, Makaza K. Herbicidal effects of Datura stramonium (L.) leaf extracts on Amaranthus hybridus (L.) and Tagetes minuta (L.). African Journal of Agricultural Research. 2018; 13 (34):1754-1760
37. Ibrahim M, Siddique S, Rehman K, Husnain M, Hussain A, Akash MSH, et al Comprehensive analysis of phytochemical constituents and ethnopharmacological investigation of genus Datura. Critical reviews™ in eukaryotic. Gene Expression. 2018; 28(3):223-276
38. Sakadzo N, Pahla I, Muzemu S, Mandumbu R, Makaza K. Herbicidal effects of Datura stramonium (L.) leaf extracts on Amaranthus hybridus (L) and Tagetes minuta (L.). African Journal of Agricultural Research. 2018; 13 (34):1754-1760
39. Kumral NA, Çobanoğlu S, Yalcin C. Acaricidal, repellent and oviposition deterrent activities of Datura stramonium L. against adult Tetranychus urticae (Koch). Journal of Pest Science. 2010; 83(2):173-180
40. Ghosh S, Tiwari SS, Srivastava S, Sharma AK, Nagar G, Kumar KA, et al. In vitro acaricidal properties of Semecarpus anacardium fruit and Datura stramonium leaf extracts against acaricide susceptible (IVRI-I line) and resistant (IVRI-V line) Rhipicephalus (Boophilus) microplus. Veterinary Science Research Journal 2015; 101:69-74
41. Shyma KP, Gupta JP, Ghosh S, Patel RK, Singh V. Acaricidal effect of herbal extracts against cattle tick Rhipicephalus (Boophilus) microplus using in vitro studies. Parasitology Research. 2014; 113(5):1919-1926.
42. Al-Snafi AE. Medical importance of Datura fastuosa (syn: Datura metel) and Datura

stramonium-a review. IOSR Journal of Pharmacy. 2017; 7(2):43-58
43. Sharma GL. Studies on antimycotic properties of Datura metel. Journal of Ethno pharmacology. 2002;80 (2-3):193-197
44. Kalim M, Hussain F, Ali H, Ahmad I, Iqbal MN. Antifungal activities of methanolic extracts of Datura inoxia. PSM Biological Research. 2016; 1(2):70-73
45. Bakht J, Qureshi M, Iqbal A, Shafi M. Effect of different solvent extracted samples from the leaves and fruits of Datura stramonium on the growth of bacteria and fungi. Pakistan Journal of Pharmaceutical Sciences. 2019; 32(1):177-184
46. Eftekhar F, Yousefzadi M, Tafakori V. Antimicrobial activity of Datura innoxia and Datura stramonium. Fitoterapia. 2005; 76 (1):118-120
47. Banso A, Adeyemo S. Phytochemical screening and antimicrobial assessment of Abutilon mauritianum, Bacopa monnifera and Datura stramonium. Journal of Biochemistry. 2006; 18(1):39-42
48. Monira KM, Munan SM. Review on Datura metel: A potential medicinal plant. Global Journal of Research on Medicinal Plants & Indigenous Medicine. 2012;1(4):123-132
49. Iqbal S, Sivaraj C, Gunasekaran K. Antioxidant and anticancer activities of methanol extract of seeds of Datura stramonium l. Free Radicals & Antioxidants. 2017;7(2):184-189
50. Bhardwaj K, Kumar S, Ojha S. Antioxidant activity and FT-IR analysis of Datura innoxia and Datura metel leaf and seed methanolic extracts. African Journal of Traditional, Complementary and Alternative Medicines. 2016; 13(5):7-16
51. Alabri THA, Al Musalami AHS, Hossain MA, Weli AM, AlRiyami Q. Comparative study of phytochemical screening, antioxidant and antimicrobial capacities of fresh and dry leaves crude plant extracts of Datura metel L. Journal of King Saud University-Science. 2014; 26(3):237-243
52. Murthy BK, Nammi S, Kota MK, Rao RK, Rao NK, Annapurna A. Evaluation of hypoglycemic and antihyperglycemic effects of Datura metel (Linn.) seeds in normal and alloxan-induced diabetic rats. Journal of Ethnopharmacology. 2004;91(1):95-98
53. Belayneh YM, Birhanu Z, Birru EM, Getenet G. Evaluation of in vivo antidiabetic, antidyslipidemic, and in vitro antioxidant activities of hydroethanolic root extract of Datura stramonium L. (Solanaceae). Journal of Experimental Pharmacology. 2019;11:29-38
54. Bagewadi ZK, Muddapur UM, Madiwal SS, Mulla SI, Khan A. Biochemical and enzyme inhibitory attributes of methanolic leaf extract of Datura inoxia mill. Environmental Sustainability. 2019;2(1):75-87
55. Pan Y, Wang X, Hu X: Cytotoxic withanolides from the flowers of Datura metel. Journal of Natural Products. 2007;70(7):1127-1132
56. Gajendran B, Durai P, Varier KM, Chinnasamy A. A novel phytosterol isolated from Datura inoxia, RinoxiaB is a potential cure colon cancer agent by targeting BAX Bcl2 pathway. Bioorganic and Medicinal Chemistry. 2019; 28(2) 115242:2-18
57. Gupta A, Kumar S, Mahindroo N, Saini KV. A bioactive fraction from Datura stramonium Linn. Promotes human immune cells mediated cytotoxicity towards lung and breast cancer cells. Pharmacognosy Journal. 2016;8(5):435-438
58. Pin F, Vercouillie J, Ouach A, Mavel S, Guilloteau D, Chicheri G. et al. Design of α7 nicotinic acetylcholine receptor ligands in quinuclidine, tropane, and quinazoline series. Chemistry, molecular modeling, radiochemistry, in vitro and rats evaluations of a [18 F] quinuclidine derivative. European Journal of Medicinal Chemistry. 2014;82:214-224
59. Lalchand D. Devhare and Niharika Gokhale A brief review on: phytochemical and antiulcer properties of plants (fabaceae family) used by tribal people of gadchiroli maharashtra. International journal of pharmaceutical sciences and research. 2023, 14(4), 1572-1593
60. Savithramma N, Sulochana C, Rao KN. Ethnobotanical survey of plants used to treat asthma in Andhra Pradesh, India J Ethnopharmacol.2007; 113: 54-61
61. Khalili Najafabadi M, Atyabi. Evalua-tion of analgesic effect of Datura stramo-nium seed extract in hot plate and formalin tested on male rats.I.J.ofmed.andArom Plants 2004; 20 309-322.
62. Alberto K. Claudia S, Ludmilla K, Arnon B.Toxic Delirium due to Da-tura stramonium. Israel Med.Asso.2001; 3: 538-539.
63. L. D. Devhare, A. P. Ghugare, B. P. Hatwar, D. C. Goupale. Method development for determination of water content from various materials by spectrophotometry and it's validation. International journal of drug delivery, 2015, 7(4). 233-240.66. Chang S. S, Wu M. L, Deng J. F, Lee,C. C, Chin, T. F, Liao, S. J. Poisoning by Datura leaves used as edible wild vegetables. Vet. and Human Toxicol;1999; 41: 242-245.

64. Dugan G. M, Gumbmann M. R, Friedman M. Toxicological evaluations of Jimson weed (Datura stramonium) seed. Food and Chem. Toxicol.1989; 27: 501-510.
65. Friedman M. Analysis of biologically active compounds in potatoes (Solanumtu-berosum), tomatoes (Lycopersiconesculen-tum), and Jimson weed (Datura stramonium) seeds. J. Chromatogr. 2004 ;10:143–155
66. Cusido RM, Palazón J, Piñol MT, Bonfill M and Morales C . Datura metel L: In vitro production of tropane alkaloids. Planta Med.1990; 65(2): 144–8.
67. Rastogi RP, Mehrotra BN. Compendium of Indian Medicinal Plants, Central Drug Research Institute, Lucknow and National Institute of Science Communication, New Delhi,1998; 1–5.
68. Lalchand D. Devhare and Niharika Gokhale. Antioxidant and antiulcer property of different solvent extracts of cassia tora linn. Research journal of pharmacy and technology. 2022, 15(3), 1109-1113.
69. Lalchand D. Devhare and Niharika Gokhale. Acid Neutralizing capacity and antimicrobial potential of selected solvent extract from various indigenous plant. Journal of Advanced Scientific Research (JASR). 2021, 12(4), 175-179.

Article | PDF Available

Seeds of Mung Bean (Vigna radiata (L.)R.Wilczek): Taxonomy, Phytochemistry, Medicinal Uses and Pharmacology

May 2020 · Current Bioactive Compounds 16(3)
DOI: 10.2174/1573407216999200529114608

Authors:

Sonali Uppalwar
Shiarda Group of Institutions

Rohit Dutt
GD Goenka University Gurgaon

Abstract and Figures

Background Seeds of Mung bean (Vignaradiata (L.)R.Wilczek)is usually identified as a "Green pearl" of Asia. It has been extensively used as a traditional food in the whole world. This is the best source of protein, minerals, and vitamins. Methods Literature has been collected through SciFinder, Web of Science, Google Scholar, Pubmed, and a library. This review shares updated information on the botany, distribution, health benefits, phytochemistry and pharmacology of Mung bean seeds. Result As per the literature survey, its found that Mung seeds (Vigna radiata (L.) R.Wilczek) has a pharmacological activity such as anticancer, antihyperlipidemic, antihypertensive, antidiabetic, anti-microbial, antioxidant, treatment of alcoholism, reducing obesity, increasing muscular strength ,rheumatism, piles, liver, and neuro - diseases. This curative potential provides various beneficial outcomes in the field of research and increasing scientific interest in the identification of bioactive compounds responsible for various pharmacological activities. It is used in industries like pharmaceutical, food, and Cosmetics. Conclusion Existing literature authenticates the potential benefits of Mung bean seeds (Vigna radiata (L.) R.Wilczek) from nutritional as well as medicinal perspective. This food grain need to be explored for identification, isolation, and characterization of a bioactive compounds against varied ailments.

Seeds of Mung bean(Vigna... | Plant of Mung bean (Vigna... | Organoleptic properties of th... | Pharmacological activity of vario...

Send Orders for Reprints to reprints@benthamscience

Current Bioactive Compounds, 2020, *16*, 1-14

MINI-REVIEW ARTICLE

Seeds of Mung Bean (Vigna radiata (L.)R.Wilczek): Taxonomy, Phytochemistry, Medicinal Uses and Pharmacology

Sonali V. Uppalwar[1,*], Vandana Garg[2] and Rohit Dutt[3]

[1]*B.S. Anangpuria Institute of Pharmacy, Faridabad-121001Haryana, India;* [2]*Department of Pharmaceutical Sciences, MD University, Rohtak-124001, Haryana, India;* [3]*School of Medical and Applied Sciences, G. D. Goenka University, Gurugram-122103 Haryana, India*

ARTICLE HISTORY

Received: December 21, 2019
Revised: March 13, 2020
Accepted: March 17, 2020

DOI
10.2174/1573407216999200529114608

Abstract: ***Background:*** Seeds of Mung bean (Vigna radiata (L.)R.Wilczek) have been recognized as a 'Green pearl' of Asian cuisine due to abundance in dietary fibres, protein, minerals, vitamins and wide variety of bioactive agents.

Methods: Literature has been collected through SciFinder, Web of Science, Google Scholar, Pubmed, and a library. This review shares updated information on the botany, distribution, health benefits, phytochemistry and pharmacology of Mung bean seeds.

Results: Bioactive components of mung bean seeds exhibited a wide array of activities such as anti-cancer, antihyperlipidemic, antihypertensive, antidiabetic, anti-microbial, antioxidant, treatment of alcoholism, reducing obesity, increasing muscular strength, rheumatism, pile, liver and neurological diseases. This curative potential highlighted its various beneficial outcomes in the field of drug research and increasing scientific interest in the identification of bioactive compounds responsible for various pharmacological activities. This legume is gaining importance for its use in the pharmaceutical, food and cosmetic products.

Conclusion: Existing literature authenticates the potential benefits of mung bean seeds from nutritional as well as medicinal perspective. This food grain needs to be explored for identification, isolation, and characterization of bioactive compounds against varied ailments.

Keywords: Mung Bean, botany, phytochemistry, nutritional Legume, food Nutrient.

1. INTRODUCTION

The seeds of mung bean (Vigna radiata (L.)R.Wilczek) have gained immense popularity for drug discovery and research besides aiding to resolve the malnutrition problem across the globe. This ancient food source is recognized as one of the most important edible legume, rich in necessary food supplements and consumed as cereal based human diet by most households in Asia. This self-pollinated and diploid legume crop belongs to the family Leguminosae or Fabaceae. This plant family is widely spread all over the world and resides for the third position for the biggest family of flowering plants. It has approximately 650 genus and 20,000 species [1]. The mung bean is commonly named as mash, golden gram and green gram. These species encompass small herbs to large tropical canopy trees and grow well in the humid tropics, temperate zones, high land, low land and arid zones [2]. In India, farmers have been cultivating seeds of mung beans since 3500 years ago. The cultivation of mung beans has spread rapidly from India to China and various regions of the Southeast Asia [3]. Mung bean plant has high nutritive significances responsible for numerous health benefits either to prevent or cure human diseases [4-5]. In addition to the nutritional component, seeds of mung beans (Fig. 1) are rich in several phytoconstituents such as phenolic acid, polyphenols, flavonoids, organic acid, sterol and triterpenes, aldehyde and lipids. Seed coats have high levels of proteins, amino acid, polyphenols, oligosaccharides which are considered the main contributor to the anti-inflammatory, antioxidative, antitumor, and antibacterial activities [6]. This plant could be considered as the source of supplementing human body with nutrients like niacin, thiamine, pantothenic acid, vitamin B6, riboflavin, vitamin K, folate, copper, manganese, iron, magnesium, phosphorus, potassium, vitamin C and dietary fiber. Being low in cholesterol and saturated fat content, soluble fibres of this food source has demonstrated beneficial effects for healthy and hypercholesterolemic patients [7]. Regular intake of these food sources could provide ample amount of lysine for vegetarian population lacking in requisite amount of lysine. It is well known for its detoxification properties ranging from enhancement of human mental function to alleviation of heat stroke and syncope during the summer seasons. Epidemiological studies promulgated that the consumption

* Address correspondence to this author at the B.S. Anangpuria Institute of Pharmacy, Faridabad-121001 Haryana, India;
E-mail: sonaliuppalwar@gmail.com

1573-4072/20 $65.00+.00


REGIONAL INSTITUTE OF PHARMACY
DTE CODE
LUCKNOW

Citations (6) References (149)

... Furthermore, high heritability along with high GAM for number of pods per plant indicated involvement of additive gene action. So, simple selection can be approached for improvement of this trait [43]. in mung bean. ... The low heritability and GAM for this trait approached towards the believe of existence of additive gene action. Similar thoughts were also shared by some previous researchers [42, 43].

Morpho-genetic assessment and dissecting the genetic architecture for Cercospora leaf spot (CLS) resistance in mung bean [Vigna radiata (L.) Wilczek]

Article

Nov 2023 · PHYSIOL MOL PLANT P ·

Jyoti Prakash Sahoo · Manaswini Mahapatra · Mamata Mohapatra · Kailash Chandra Samal

View · Show abstract

attracted attention in the last few years in various food products [24] [25] [26]. Many studies have demonstrated a positive relationship between TPC and antioxidant activity in several fruits and plants [5,26]. ...

Citation

Article · Full-text available

May 2022

Huda A O Al-Jumayi · H A ; Allam · Alaa E. El-Bellagy · Amin Abd El Halim Ahmed Kandil

View · Show abstract

... Reference [25] reported antiproliferative effects of mung bean extracts germinated for 48 hours, tested on different drugresistant colon cancer cell lines, T84 and HCT-18, as well as on a non-tumorous CCD-18 line. Similarly, [38] showed that bioactive components of mung bean seeds have a wide range of activities such as anticancer, antihyperlipidemic, and antihypertensive activities. Reference [39] reported an in vivo study suggesting that aqueous extracts of fermented mung bean could delay the formation of breast cancer and reduce the mitotic division of the tumor by stimulating the cytokine production of T cells. ...

Anti-Inflammatory and Anti-Colon Cancer Activities of Mung Bean Grown in Burkina Faso

Article · Full-text available

Aug 2022 · EVID-BASED COMPL ALT

Wendmintiri Jeanne d'Arc Kabré · Durand Dah-Nouvlessounon · Faloumata Hama-Ba · Aly Savadogo

View · Show abstract

... Plant extracts are rich in many important non-nutritional and biologically active compounds such as phytochemicals. Among these different phytochemicals, it was found that total phenolic (TPC) and total flavonoid compounds (TFC) have attracted attention in the last few years in various food products [24] [25] [26]. Many studies have demonstrated a positive relationship between TPC and antioxidant activity in several fruits and plants [5,26]

Bioactive Compound, Antioxidant, and Radical Scavenging Activity of Some Plant Aqueous Extracts for Enhancing Shelf Life of Cold-Stored Rabbit Meat

Article · Full-text available

May 2022

Huda A O Al-Jumayi · Ayman Younes Allam · Alaa E. El-Bellagy · Amin Abd El Halim Kandil

View · Show abstract

Improvement in Quality and Yield of Mungbean Through Combined Use of Crop-Specific Rhizobium and Physiological Precursors

Article · Full-text available

Apr 2023 · GESUNDE PFLANZ

Shabana Ehsan · Muhammad Amjad Qureshi · Muhammad Asif Ali · Ali Raza

View · Show abstract

Comparative Omics-Based Identification and Expression Analysis of a Two-Component System in Vigna radiata in Drought Stress

Article · Full-text available

Mar 2023

Muhammad Afzal · Farrukh Azeem · Shumaila Afzal · Muhammad Amjad Nawaz

View · Show abstract

Article Full-text available

Mung Bean (Vigna radiata L.): Bioactive Polyphenols, Polysaccharides, Peptides, and Health Benefits

May 2019 · Nutrients

Dianzhi Hou · Qun Shen · Laraib Yousaf · [...] Yong Xue

Mung bean (Vigna radiata L.) is an important pulse consumed all over the world, especially in Asian countries, and has a long history of usage as traditional medicine. It has been known to be an excellent source of protein, dietary fiber, minerals, vitamins, and significant amounts of bioactive compounds, including polyphenols, polysaccharides, and peptides, therefore, becomes a popular [Show full abstract]

View full-text

Article

Isolation, characterization, and evaluation of anxiolytic bioactive compounds from the seed of Vigna ...

March 2023 · Natural Product Research

Sonali Uppalwar · Rohit Dutt · Vandana Garg · Shrikant Joshi

Present therapy for managing anxiety disorders is linked with a wide range of adverse effects. The conventional practice of the use of plant extract may indicate an important and new approach to the anxiolytic agent. Seeds of V. radiata belonging to the family Fabaceae is commonly employed to treat several diseases. However, no data is available to screen its possible neuropharmacological effect. ... [Show full abstract]

Read more

Article Full-text available

Review on health promoting biological activities of mungbean: A potent functional food of medicinal ...

August 2020 · PLANT ARCHIVES

Nirmala Sehrawat · Mukesh Yadav · Sunil Kumar · [...] Anil Kumar

Mung bean (Vigna radiata L.) is an important and nutritious food grain legume which plays a vital role in human nutrition due to its plentiful nutrients like proteins, dietary fibers, minerals and vitamins. Besides nutrition, presence of significant amounts of various bioactive compounds in mungbean, make this crop as a good alternative functional food. Developing countries are facing problems of [Show full abstract]

View full-text

Conference Paper Full-text available

Functional properties of mung bean protein

February 2022

Mohammad Tarahi · Sara Hedayati · Fakhri Shahidi

Mung bean (Vigna radiata L.) is a plant in the Fabaceae family. In Asia, it is mostly eaten as a whole grains, bean sprouts, or noodles. Mung bean seeds are also rich in essential vitamins, minerals, proteins and amino acids. The area under mung bean cultivation worldwide is about 6 million hectares. Which accounts for approximately 4% of the global area under legumes. Recent studies [...] [Show full abstract]

View full-text

IDEAL INSTITUTE OF PHARMACY
DTE Code
WARDA

PRINCIPAL
Ideal Institute Of Pharmacy
At-post-posher, Tal- Wada,
Dist - Palghar Maharashtra 421303

EVALUATION OF AZADIRACHTA INDICA LEAVES EXTRACT FOR ANTI-ALLERGIC POTENTIAL

A. Helen Sonia
Pawar Kavita Yogesh
Sonali V Uppalwar
Romila Antony
B. Sathya
Payal Rani
Rajiv Bharti
Biresh Kumar Sarkar
Dhammshila L Devhare

Keywords

Azadirachta indica, allergy, ethanolic, nimbin, histamine

Abstract

This study investigates the antiallergic potential of *Azadirachta indica* leaves extract as a natural remedy for allergic conditions. *Azadirachta indica*, commonly known as Neem, has a history of medicinal use in traditional medicine systems. The ethanolic extract was prepared from the leaves and evaluated in allergen-induced allergic reactions using animal models and *in-vitro* process. The extract demonstrated significant antiallergic effects, reducing histamine release, suppressing pro-inflammatory cytokines, and enhancing immunomodulatory activity. These findings support the traditional use of *Azadirachta indica* and its potential as an antiallergic agent. The presence of bioactive compounds like nimbin, nimbidin, and azadirachtin may contribute to its antiallergic properties. Further research is needed to elucidate the underlying mechanisms and evaluate the extract's safety and efficacy in human subjects. If proven effective, *Azadirachta indica* leaves extract could offer an affordable and accessible alternative for managing allergic conditions

References

1. Sharma M, Sharma AK, Kumar A. Azadirachta indica: A herbal panacea in dermatology. Int J Pharm Sci Res 2018; 9(7):2617-28.
2. Gupta SC, Prasad S, Tyagi AK, et al. Neem (Azadirachta indica): An Indian traditional panacea with modern molecular basis. Phytomedicine. 2017; 34:14-20.
3. Siddiqui BS, Afshan F, Gulzar T, Sultana R. A comprehensive review on biological activities of neem (Azadirachta indica). Life Sci. 2021; 281:119808.
4. Tiwari R, Verma AK, Srivastava SK, et al. Therapeutic uses of Azadirachta indica (Neem) leaves: A review. Chem Pharm Res. 2011; 3(1):10-14.
5. Rehman MU, Ali M, Khan R, et al. Antihistaminic and anticholinergic effects of nimbeidin: A new antiallergic

agent from Azadirachta indica. Nat Prod Res. 2014; 28(18):1548-51.
6. Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U. Biological activities and medicinal properties of neem (Azadirachta indica). Curr Sci. 2002; 82(11):1336-45.
7. Singh D, Singh G, Kashyap A. Pharmacological potential of Azadirachta indica: A review. J Pharmacogn Phytochem. 2018; 7(3):1741-49.
8. Dey D, De R, Ghosh AK, et al. Evaluation of anti-allergic property of methanolic extract of Azadirachta indica leaves in rodents. Indian J Pharmacol. 2012; 44(3):357-60.
9. Gupta R, Sharma AK, Sharma MC, et al. Therapeutic efficacy of Azadirachta indica leaves in experimental models of allergic rhinitis. Int J Pharmacol. 2019; 15(2):172-79.
10. Singh A, Mehta A, Tripathi P, et al. Evaluation of antiallergic potential of Azadirachta indica in a murine model of asthma. J Tradit Complement Med. 2020; 10(1):59-65.
11. Patel, J. R., Tripathi, P., Sharma, V., Chauhan, N. S., & Dixit, V. K. (2010). Evaluation of antiallergic activity of Phyllanthus emblica (amla) fruits in isolated goat tracheal chain preparation. Pharmaceutical Biology, 48(4), 461-468. doi: 10.3109/13880200903190982
12. Waghmare, A. B., Chavan, M. J., Bhaskar, V. H., & Gaviraj, E. N. (2019). Antiallergic potential of Aegle marmelos in mast cell-mediated allergy model. International Immunopharmacology, 75. doi: 10.1016/j.intimp.2019.105819
13. Muma, N. A., & Mathis, D. A. (1988). Clonidine-induced catalepsy: time course, drug interactions, and dopamine receptor involvement. Journal of Pharmacology and Experimental Therapeutics, 246(1), 47-54.
14. Florijn, W. J., van Luijtelaar, E. L., & van den Hoogen, R. H. (1990). Influence of clonidine and diazepam on haloperidol-induced catalepsy in rats. European Journal of Pharmacology, 182(2), 361-365. doi: 10.1016/0014-2999(90)90352-9
15. Sharma, V., Tripathi, P., Patel, J. R., Chauhan, N. S., & Dixit, V. K. (2011). Evaluation of antiallergic activity of ethanolic extract of Azadirachta indica leaves in animal models. Pharmaceutical Biology, 49(4), 413-419. doi: 10.3109/13880209.2010.529064
16. Mahesh, A., Jeyachandran, R., Cindrella, L., Thangadurai, D., Veerapur, V. P., & Muralidhara Rao, D. (2011). Nimbidin suppresses functions of dendritic cells through down-regulation of pro-inflammatory cytokines and antigen uptake, and impairment of T cell stimulation. European Journal of Pharmacology, 657(1-3), 69-79. doi: [DOI]
17. Parveen, S., Alam, P., Sahoo, H. B., & Rizvi, M. M. A. (2012). Immunomodulatory effect of ethanolic extract of Azadirachta indica leaves on mast cells in vitro and in vivo. Asian Pacific Journal of Tropical Biomedicine, 2(1), S37-S40. doi: 10.1016/S2221-1691(12)60132-7
18. Ali, M. B., Alam, P., Alam, N., & Siddiqui, M. S. (2013). Comparative immunomodulatory activities of ethanolic extracts of Azadirachta indica, Allium sativum, and Datura stramonium in animals. Indian Journal of Pharmacology, 45(1), 68-71. doi: 10.4103/0253-7613.106435
19. Saeed, N., Khan, M. R., Shabbir, M., & Muhammad, N. (2016). Urtica dioica (Stinging Nettle): A review of its chemical, pharmacological and therapeutic potential. Journal of Ethnopharmacology, 189, 135-146. doi: 10.1016/j.jep.2016.05.042
20. Golandaz G, Pal A, Vaibhav Uplanchiwar, Rupesh Gautam. A Butea Monosperma flower partially reduces high fat diet induced obesity in experimental rats. Obesity Medicine, 17(2020) 100179. doi: https://doi.org/10.1016/j.obmed.2019.100179.
21. Vaibhav Uplanchiwar, M.K. Gupta, Rupesh K. Gautam. Memory enhancing effect of various polar and nonpolar extracts of Plumbago Zeylanica Linn. Roots. International Journal of Green Pharmacy, Jan-June 2018 (Suppl).12 (1).
22. Sushil Raut, Vaibhav Uplanchiwar, Avinash Gahane, Santosh Bhadoriya, Shrishail Patil, Sunil K Jain. Development, characterization and investigation of anti-inflammatory potential of valdecoxib topical gels. Journal of Scientific & Industrial Research Vol. 71, April 2012, pp. 273-278
23. Uplanchiwar, Vaibhav P., Sushil Yadaorao Raut, and Lalchand D. Devhare. "Pharmacological assessment of antiulcer activity of gloriosa superba linn tubers in experimentally induced gastric ulcers." Journal of medical pharmaceutical and allied science 10.3 (2021): 2852-2856.
24. Anuj Modi, Vimal kumar Jain, Prateek Jain, Sunil Jain, Vaibhav Uplanchiwar. Evaluation of antioxidant activity of flavonoids and phenolic content Luffa Echinata Roxb. Fruits and Nyctanthus Arbor-Tristis leaves.

International Journal of Phytopharmacy, 1, 2011.
25. Devhare, L. D., Ghugare, A. P., & Hatwar, B. P. (2015). Method development for determination of water content from various materials by spectrophotometry and it's validation. International journal of drug delivery, 7(4), 233-240.
26. Devhare, L. D., & Kore, P. K. (2016). A recent review on bioavailability and solubility enhancement of poorly soluble drugs by physical and chemical modifications. Research chronicle in health sciences, 2(5), 299-308.
27. Tonde, T. U., Kasliwal, R. H., & Devhare, L. D. (2016). Quantitative Estimation of Bacoside A in Polyherbal Memory Enhancer Syrup for Memory Boosting Activity Using HPTLC Method. Research Chronicle in Health Sciences, 2(6), 315-320.
28. Ghugare, A. P., Devhare, L. D., & Hatwar, B. P. (2016) Development and validation of analytical methods for the simultaneous estimation of Nimorazole and Ofloxacin in tablet dosage form. 8(3), 96-98.
29. Salpe, H. G., Devhare, L. D., Ghugare, A. P., & Singh, N. (2016). Formulation and evaluation of hpmc coated diltiazem hcl tablet and its comparison with other marketed preparation. Research chronicle in health sciences, 3(1), 11-17.
30. Makhani, A. A., & Devhare, L. D. (2017). Development and validation of vierordt's spectrophotometric method for simultaneous estimation of Drotaverine and Nimesulide combination. Research chronicle in health sciences, 3(2), 22-28.
31. Makhani, A. A., & Devhare, L. D. (2017). Development and Validation of Analytical Methods for Drotaverine and Nimesulide Combination. Research Chronicle in Health Sciences, 3(3), 40-44.
32. Katole, G., & Devhare, L. D. (2020). Recent insight into some emerging natural resources with remarkable hepato protective potentials. International journal of pharmaceutical science and research, 5(1), 41-47.
33. Uplanchiwar, V. P., Raut, S. Y., & Devhare, L. D. (2021). Pharmacological assessment of antiulcer activity of gloriosa superba linn tubers in experimentally induced gastric ulcers. Journal of medical pharmaceutical and allied science, 10(3), 2852-2856.
34. Devhare, L. D., & Gokhale, N. (2021). Acid neutralizing capacity and antimicrobial potential of selected solvent extract from various indigenous plants. Journal of Advanced Scientific Research, 12(04), 175-179.
35. Devhare, L. D., & Gokhale, N. (2022). Antioxidant and Antiulcer property of different solvent extracts of Cassia tora Linn. Research Journal of Pharmacy and Technology, 15(3), 1109-1113.
36. Devhare, L. D., & Gokhale, N. (2023). In silico anti-ulcerative activity evaluation of some bioactive compound from Cassia tora and Butea monosperma through moleculer docking approach. International journal of pharmaceutical sciences and research, 14(2), 1000-1008.
37. Devhare, L. D., & Gokhale, N. (2023). A brief review on: phytochemical and antiulcer properties of plants (fabaceae family) used by tribal people of gadchiroli maharashtra. International journal of pharmaceutical sciences and research, 14(4), 1572-1593.
38. Nikam N, R., Vaishnavi, A., & Devhare, L. D. (2023). Parenteral drug delivery approach: an overview. Journal of xidian university, 17(1), 386-400.
39. Shende, S. M., Bhandare, P., & Devhare, L. D. (2023). In-vitro: micropropagation of mint and investigate the antibacterial activity of mint extract. Eur. Chem. Bull, 12(5), 780-784.
40. Bodhankar, S. S., Devhare, L. D., Meshram, A. S., Moharkar, D. W., & Badwaik, C. B. (2023). Formulation and in vitro evaluation of dental gel containing ethanglic extract of Mimosa pudica. European Chemical Bulletin, 12(5), 1293-1299.
41. Devhare, L. D., Bodhankar, S. S., Warambhe, P., Uppalwar, S. V., Uchibagle, S., & Shende, S. M. (2023). Important role of food and nutritional security during Covid-19: A survey. European Chemical Bulletin, 12(5), 1363-1374.
42. Pathak, N. R., Devhare, L. D., Sawarkar, K. R., Dubey, M., Trivedi, V., Thakre, A. R., & Thakare, V. M. (2023). Aclinial reveiew on pharmacological evaluation of Thiazolidine and Isatin in the new millenium as magic moieties. European Chemical Bulletin, 12(5), 3410-3417.
43. Singh, S., Minj, K. H., Devhare, L. D., Uppalwar, S. V., Anand, S., Suman, A., & Devhare, D. L. (2023). An update on morphology, mechanism, lethality, and management of dhatura poisoning. European Chemical Bulletin, 12(5), 3418-3426.
44. Suruse, P. B., Jadhav, B. A., Barde, L. G., Devhare, L. D., Singh, S., Minj, K. H., & Suman, A. (2023). Exploring the potential of Aerva Lanata extract in a herbal ointment for fungal infection treatment. Journal of Survey in

Fisheries Sciences. 10(1), 1922-1932.
45. Shende, S. M., Meshram, B., Karemore, H., & Devhare, L. D. (2023). Development And Characterization of Glycerogelatin Suppositories For Enhanced Efficacy. European Journal of Pharmaceutical and Medical Research. 10(6), 522-528.
46. Thakare, V. M., Umare, S. A., & Devhare, L. D. (2023). Separation and purification of carboxymethyl cellulose from Spinacia Oleracea for use in pharmaceutical dosage form. European Chemical Bulletin, 12(5), 4062-4080
47. Suruse, P. B., Deshmukh, A. P., Barde, L. G., Devhare, L. D., Maurya, V. K., Deva, V., & Priya, N. S. (2023) Rimegepant embedded fast dissolving films: A novel approach for enhanced migraine relief. Journal of Survey in Fisheries Sciences, 10(1) 2071-2084.
48. Prasad, M., Suman, A., Srivastava, S., Khosla, G., Deshmukh, A., Devhare, L. D., & Meshram, S. S. Butea monosperma stem bark extract partially reverses high fat diet-induced obesity in rats. European Chemical Bulletin. 12(5), 4267 – 4273.
49. Shukla, M., Tiware, S. A., Desai, S. R., Kumbhar, S. T., Khan, M. S., Mavai, Y., & Devhare, L. D (2023). Pharmacological Evaluation of Gloriosa Superba Linn Flower Extract For Antiulcer Activity. Journal of Survey in Fisheries Sciences. 10(2) 463-470.
50. Polireddy, P., Malviya, V., & Devhare, L. D. (2023). Assessment of Hepatoprotective Potential of Ecbolium Linneanum Extract on Experimental Animals. Journal of Coastal Life Medicine. 2(11) 884-890
51. Devhare, L. D., Hiradeve, S. M., & Bobade, T. (2017). Method Development & Validation For Determination of Water Content. LAP LAMBERT Academic Publishing.
52. Shukla, M., Tiware, S. A., Desai, S. R., Kumbhar, S. T., Khan, M. S., Mavai, Y., & Devhare, L. D (2023). Pharmacological Evaluation of Gloriosa Superba Linn Flower Extract For Antiulcer Activity. Journal of Survey in Fisheries Sciences, 10(2) 463-470.
53. Polireddy, P., Malviya, V., Arora, S., Singh, M., Pooja Tanaji, G., Devhare, L. D., & Dharmamoorthy, G. (2023). Assessment of Hepatoprotective Potential of Ecbolium Linneanum Extract on Experimental Animals. Journal of Coastal Life Medicine, 11(2) 884-890.
54. Singh, M., Malik, A., Devhare, D. L., Ruikar, D. B., Krishnan, K., Kumar, D. V., & Devnani, D. (2023). Comparative Case Study on Tuberculosis Patients Between Rural And Urban Areas. Journal of Survey in Fisheries Sciences, 10(2) 622-632.
55. Devhare, L. D., Kumbhar, S. T., Chitrapu, P., Kundral, S., & Borkar, A. A. (2023). In-Silico Molecular Docking Study of Substituted Imidazo 1, 3, 4 Thiadiazole Derivatives: Synthesis, Characterization, and Investigation of their Anti-Cancer Activity. Journal of Coastal Life Medicine, 11(2) 1237-1245.
56. Thakre, S. M., Kumar, D. V., Ahuja, A., Hamid, N., Thakre, A. R., Khan, M. S., & Devhare, D. L. (2023). Exploring the Influence of an Antifungal Medication on Patients Receiving Oral Hypoglycemic Therapy: Investigating the Interplay Between Medications. Journal of Coastal Life Medicine, 11(2) 1255-1262.
57. Devhare, L. D., Katole, G. (2018) Diluent and granulation study on Metformin Hydrochloride. LAP LAMBERT Academic Publishing.

Published
Jul 28, 2023

DOI https://doi.org/10.53555/jptcp.v30i1.2437 (https://doi.org/10.53555/jptcp.v30i1.2437)

How to Cite

A. Helen Sonia, Pawar Kavita Yogesh, Sonali V Uppalwar, Romila Antony, B. Satiya, Payal Rani, Rajiv Bharti, Biresh Kumar Sarkar, & Dhammshila L Devhare. (2023). EVALUATION OF AZADIRACHTA INDICA LEAVES EXTRACT FOR ANTI-ALLERGIC POTENTIAL. *Journal of Population Therapeutics and Clinical Pharmacology*, *30*(1), 401–408. https://doi.org/10.53555/jptcp.v30i1.2437

More Citation Formats

Issue
Vol. 30 No. 1 (2023): JPTCP (https://jptcp.com/index.php/jptcp/issue/view/62)

Section

Articles

Author Biographies

A. Helen Sonia
A. Raja Pharmacy College, Vadakkangulam, Tirunelveli District, Tamil Nadu, India

Pawar Kavita Yogesh
Khandesh College Education Society's Institute of Management & Research, IMR Campus, Jalgaon, Maharashtra

Sonali V Uppalwar
Department of Pharmacology, Surya School of Pharmacy, Vikravandi, Villupuram, Tamil Nadu, India

Romila Antony
National college of Pharmacy, Manassery, Mukkam, Kozhikode

B. Sathya
Ideal Institute of Pharmacy, Palghar.

Payal Rani
Seth GL Bihani SD college of tech. edu., Sriganganagar 335001 (Raj), India.

Rajiv Bharti
Maharishi Parshuram College of pharmacy, Fazilka.

Biresh Kumar Sarkar
Assistant Director Pharmacy, Central Ayurveda Research Institute (CARI), Kolkata, India

Dhammshila L Devhare
Community Health Officer, NRHM, Nandagomukh, Nagpur, Maharashtra.

JOURNAL OF POPULATION THERAPEUTICS AND CLINICAL PHARMACOLOGY

Contact us

If you need any information, please click here (https://wa.me/message/TH36EGJEDVHGC1)

Indexing Database

Clarivate Analytics (https://mjl.clarivate.com/search-results)

Scopus (https://www.scopus.com/sourceid/20125)

PubMed, Embase (https://www.ncbi.nlm.nih.gov/nlmcatalog?term=1710 6222+AND+(ncbijournals%5BAll+Fields%5D)&cmd=DetailsSearch)

Journal of Population Therapeutics and Clinical...

SJR 2022
0.28

WORLD JOURNAL OF PHARMACY AND PHARMACEUTICAL SCIENCES

Abstract

A REVIEW: NUTRACEUTICALS (BRIEF DRUG STUDY OF TAB. DYNOCAL)

Salahuddin Ansari*, Shubham Argade, Sadhana Baladhe, Shital Baladhe, Siddheshwari Bhosale and Dr. Sonal Uppalwar

ABSTRACT

Nutraceutical is the hybrid of 'nutrition' and 'pharmaceutical". Nutraceutical, in broad, are food or part of food having a significant role in modifying and maintaining normal physiological function that maintains healthy human beings. The principal reasons for the growth of the nutraceutical market worldwide are the current population and the health trends. The food products used as nutraceutical can be categorized as dietary fiber, prebiotics, probiotics, polyunsaturated fatty acids, antioxidants and other different types of herbal/ natural foods. These nutraceuticals help in combating some of the major health problems of the century such as obesity, cardiovascular diseases, cancer, osteoporosis, anemia, macular cholesterol etc. In whole, 'nutraceutical' has lead to the new era of medicine and health, in which the food industry has become a consumer oriented sector.

Keywords: The principal reasons for the growth of the nutraceutical market worldwide are the current population and the health trends.

Article | PDF Available

Exploring Psoriasis in the Modern Context: Pathogenic Insights, Clinical Profiles, and Herbal Dietary Solutions

December 2023 · International Journal of Zoological Investigations 9(2) 1327-1337
DOI:10.3[illegible]ijzi.2023.v09i2.149

Authors:

Kumara Swamy Samanthula
Assam down town University, Guwahati, Assam

Kumar Pramod

Manjunath Anoop

Uppalwar Sonali

Show all 6 authors

[illegible] Download citation | Copy link

References (27) Figures (2)

Abstract and Figures

The present review aimed to explore the various types of Psoriasis for quick updates on its etiology, pathophysiology, and treatment. Psoriasis is a common, chronic skin disease with a global prevalence of approximately 60 million people. It presents as chronic, symmetrical, erythematous scaling papules and plaques, and its impact extends beyond the skin, contributing to serious health issues such as depression, psoriatic arthritis, and cardiometabolic syndrome. Although primarily genetic, environmental factors, including infections, play a role in its manifestation. Reliable information on psoriasis has been collected from reputable sources. This condition necessitates holistic care, given its association with comorbidities and its significant impact on physical, emotional, and social well-being. Advances in understanding its pathophysiology have led to the development of highly effective and targeted treatments, offering hope for improved management and relief for those affected. The study summarizes psoriasis and its treatments that are very effective and targeted. Advances in the understanding of its pathophysiology have led to the development of highly effective and targeted treatments

(A) skin with Psoriasis... Psoriasis managemen...

Figures - uploaded by Kumara Swamy Samanthula Author content

Citations (0) References

1, 3-diketo curcumin scaffolds: A gateway to profuse bioactive heterocycles

Article Full-text available

Jun 2022

Siraj B Shaikh · Shaheen Mulani · Nazia Tambat · Khursheed Ahmed

View · Show abstract

Progressive Symmetrical Erythrokeratoderma-Like Psoriasis: A New Case Report

Article Full-text available

Jan 2021

Waqas Saad Abdulwahhab · Sumer Baroud · Khaled Adel Al Sayed

View

Mitigation of dermal auto immune disease through combined action of natural constituents: An advantageous over allopathic medicines

Article Full-text available

Jun 2020

Kuntal Das · Adnan Khan · V. Gowthami V. Gowthami · S. Yahya Ahmed

View

Tinea Incognito Mimicking Pustular Psoriasis in a Patient With Psoriasis and Cushing Syndrome

Article

Apr 2021 · CUTIS

Gerhard Eichhoff

View

Concoct Children to Combat the Third Wave of COVID-19

Article

Nov 2021

Hindustan Abdul Ahad · Harinath Chinthaginjala · Syed Rahamathulla · Syed Azmathulla

View · Show abstract

Operative Management and Disposal of Hospital Wastes: A Comprehensive Appraisal

Article

Sep 2021

Hindustan Abdul Ahad · Lamt Singh · Harinath Chinthaginjala · Akhila Chowdary

View · Show abstract

Tofacitinib for the Treatment of Refractory Palmoplantar Psoriasis: A Case Series

Article

Feb 2021

Sonal Muzumdar · Craig Leonardi · Bruce Strober

View · Show abstract

How to Best Define Psoriasis Severity: A New Consensus Statement From the International Psoriasis Council

Article

Feb 2021

Andrew Blauvelt · Bruce Strober

View

Biosimilars für Psoriasis und Psoriasis-Arthritis

Article

Mar 2020

Ulrich Mrowietz

View

Oral Taodan granules for mild-to-moderate psoriasis vulgaris: protocol for a randomized, double-blind, multicenter clinical trial

Article

Sep 2019

Yi Ru · Xiao-Ning Yan · Su-qing Yang · Bin Li

View Show abstract

Show more

IDEAL INSTITUTE OF PHARMACY * WADA * DTE CODE 2407

PRINCIPAL
Ideal Institute Of Pharmacy
At-post-posher, Tal- Wada,
Dist - Palghar Maharashtra 421303

Reynolds TM, Pottle A, Quoraishi SH. 2021. Current perspectives on the attainment of lipid modification goals relating to the use of statins and ezetimibe for the prevention of cardiovascular disease in the United Kingdom. Vascular Health and Risk Management. 21:227-37.

Roth GA, Mensah GA, Johnson CO, Addolorato G, Ammirati E, Baddour LM, Barengo NC, Beaton AZ, Benjamin EJ, Benziger CP, Bonny A. 2020. Global burden of cardiovascular diseases and risk factors, 1990–2019: update from the GBD 2019 study. Journal of the American College of Cardiology. 76(25):2982-3021.

Savorani F, Rasmussen MA, Mikkelsen MS, Engelsen SB. 2013. A primer to nutritional metabolomics by NMR spectroscopy and chemometrics. Food Research International. 54(1):1131-45.

Sniderman AD, Williams K, Contois JH, et al. 2011. A meta-analysis of low-density lipoprotein cholesterol, non-high-density lipoprotein cholesterol, and apolipoprotein B as markers of cardiovascular risk. Circ Cardiovasc Qual Outcomes. 4(3):337-345.

Virani SS. 2011. Non-HDL cholesterol as a metric of good quality of care: opportunities and challenges. Texas Heart Institute Journal. 38(2):160.

Wiklund O, Pirazzi C, Romeo S. 2013. Monitoring of lipids, enzymes, and creatine kinase in patients on lipid-lowering drug therapy. Current cardiology reports. 15:1-0.

Research Article

Exploring the Potent Antidiarrheal Properties of *Capparis Zeylanica* Leaf Extracts

Sanjay Kumar[1], Ganesh Balappa Gajeli[2*], Rekha Jangra[3], Laxmi Biban[4], Sonali Uppalwar[5], Vamseekrishna Gorijavolu[6], Biresh Kumar Sarkar [7], P.Balaji[8]

[1]Faculty of Pharmacy, Uttar Pradesh University of Medical Sciences, Saifai, Etawah

[2]D.S.T.S.Mandal's College of pharmacy Solapur, Vijapur Road, Solapur

[3,4]Department of Botany, Pt. C.L.S. Govt. College, Karnal, Haryana (India)

[5]Ideal Institute of Pharmacy, Wada, Palghar

[6]Department of pharmaceutical Analysis, NRI College of Pharmacy, Pothavarappadu (V), Agiripalli (M),Eluru(D.t), Andhra Pradesh

Central Ayurveda Research Institute (CARI), Kolkata, India

[8]Vels Institute of Science, Technology & Advanced Studies (VISTAS), Pallavaram, Chennai

Main Author: Sanjay Kumar

Email: sanjaypharma20065@gmail.com

Corresponding Author: Ganesh Balappa Gajeli*

Email: ganeshgajeli@yahoo.com

Abstract:

Diarrheal diseases remain a significant global health concern, particularly in regions with limited access to healthcare and safe drinking water. The search for effective, affordable, and sustainable treatments for diarrhea continues to be a priority in the field of medical research. *Capparis zeylanica,* a plant widely distributed in tropical and subtropical regions, has been traditionally used for its medicinal properties. This study investigates the Antidiarrheal potential of *Capparis zeylanica* leaf extracts, aiming to provide scientific validation for its traditional use. The present study investigated the potential antidiarrheal effects of methanolic leaf extract derived from *Capparis zeylanica* (Capparidaceae) using a

castor oil-induced diarrhea model and the small intestine transit method in mice. In comparison to loperamide (2 mg/kg/bw), the ethanolic extract of C. zeylanica (administered at doses of 100, 200, and 400 mg/kg body weight) demonstrated a noteworthy reduction in the severity of diarrhea. The level of protection observed in animals treated with the extract and experiencing diarrhea was compared to those treated with castor oil and loperamide. Notably, the antidiarrheal activity exhibited a dose-dependent response. Additionally, when assessed for its impact on intestinal transit, the extract displayed a substantial decrease in intestinal motility. These results indicate that the ethanolic extract effectively mitigated diarrhea in mice, accompanied by a reduction in stool weight. Further investigation into safety profile of these extracts is warranted to support their development as a viable therapeutic option for diarrheal diseases.

Keywords: *Capparis zeylanica*, Antidiarrheal, Leaf extracts, enteric pathogens, Traditional medicine

Introduction:

Diarrheal diseases remain a significant global public health challenge, particularly in regions with limited access to healthcare resources and safe drinking water. According to the World Health Organization (WHO), diarrhea is a leading cause of morbidity and mortality, particularly among children under five years of age, accounting for approximately 1.6 million deaths annually worldwide (1). In addition to its impact on mortality, diarrhea places a substantial economic burden on affected individuals and healthcare systems (2).

The treatment of diarrhea typically involves rehydration and, in some cases, the use of antimicrobial agents. However, the emergence of antimicrobial resistance and the limited availability of healthcare facilities in resource-constrained settings underscore the importance of exploring alternative, cost-effective, and sustainable approaches to managing this prevalent condition (3,4).

Traditional medicine has long been a source of remedies for various ailments, including diarrhea. In this context, Capparis zeylanica, a plant widely distributed in tropical and subtropical regions, has a history of traditional use for its medicinal properties. While it has

been utilized by local communities for its potential antidiarrheal effects, there is a paucity of scientific evidence validating its efficacy (5).

This study aims to bridge the gap between traditional knowledge and scientific validation by investigating the antidiarrheal properties of *Capparis zeylanica* leaf extracts. By employing a multidisciplinary approach that includes in vitro assays against enteric pathogens and in vivo experiments using animal models, we seek to elucidate the potential mechanisms underlying its antidiarrheal effects (6).

This research holds the promise of contributing to the development of affordable and accessible solutions for the management of diarrhea, particularly in regions where diarrhea-related morbidity and mortality rates remain high. The study of traditional medicinal plants like Capparis zeylanica represents a valuable avenue for discovering new therapeutic options and addressing global health challenges (7).

2.0 Material and Methods

2.1 Plant Material

The fresh leaves of *C. zeylanica* (Capparidaceae), collected at the flowering stage in the month of March and were authenticated by the renowned botanist. A voucher specimen was deposited in the departmental herbarium. Leaves were dried in shade for 25 days and then powdered to get a coarse powder. This powder was stored in air-tight container and used for further successive extraction.

2.2 Preparation of Crude Extract

The dried and powdered plant material was Soxhlet's extracted with ethanol. The extraction was carried out for 24 h at room temperature with mild shaking. The extract was filtered and concentrated at 45°C, and the weight of the residue was recorded. The percentage yield of ethanolic extract was found to be 38.40% w/w and was used for further studies.

2.3 Animals

Albino mice of either sex weighing between 20-30g were procured from central animal house for experimental purpose. The animals were acclimatized to laboratory conditions for 7 days. The animals were supplied with commercially available standard diet from. Water was allowed *ad libitum* under hygienic conditions. All animal studies were

performed in accordance to guideline of CPCSEA and Institutional Animal Ethical Committee (IAEC) guidelines.

2.4 Acute Toxicity Study

The acute toxicity assessment of *Capparis zeylanica* leaf extracts was conducted using albino mice of both sexes, weighing between 20-25 grams, and maintained under standardized conditions. Prior to the experiments, the animals underwent a 3-hour fasting period. They were then administered a single dose of alcoholic leaf extract from C. zeylanica and monitored for mortality over a 48-hour study period, which is considered as a short-term toxicity evaluation. Subsequently, in accordance with the guidelines outlined in OECD No. 425 (Acute Oral Toxicity: Up-and-Down Procedure), the subsequent dosages were determined based on the initial short-term toxicity profile. Specifically, doses equivalent to 1/20, 1/10, and 1/5 of the LD50 (lethal dose for 50% of the tested animals) were selected and categorized as low, medium, and high doses, respectively (8).

2.5 Castor Oil-induced Diarrhea

Twenty-four mice underwent an 18-hour fasting period and were subsequently divided into five groups, each comprising six animals. All groups received an oral dose of 0.4 ml of castor oil. Thirty minutes after the administration of castor oil, the first group (referred to as the control group) was given a vehicle solution consisting of 0.5% Tween 80 in distilled water. The second group was administered the reference drug loperamide at a dosage of 2 mg/kg body weight. The third, fourth, and fifth groups received doses of 100, 200, and 400 mg/kg body weight, respectively, of the ethanolic extract of *Capparis zeylanica* (ECZ). Subsequently, the mice were individually housed.

To evaluate the severity of diarrhea, assessments were conducted at hourly intervals over a span of 6 hours. The total weight of feces was documented within a 24-hour period and compared to that of the control group. The total number of diarrhea episodes in the control group served as the baseline, representing 100%. The results were then expressed as the percentage of diarrhea inhibition (9,10).

2.6 Small Intestinal Transit

The animals were divided into five groups, each comprising six mice. They were orally administered 1 ml of a charcoal meal, consisting of 5% activated charcoal suspended in

physiological saline, 60 minutes after receiving an oral dose of either drugs or a vehicle solution. In specific detail:

- Group I was given physiological saline at a dose of 10 ml/kg.
- Groups II, III, and IV received different doses of the ethanolic extract of *Capparis zeylanica* (ECZ) at 100 mg/kg, 200 mg/kg, and 400 mg/kg, respectively
- Group V was administered atropine sulfate at a standard dosage of 0.1 mg/kg.

After a 30-minute interval, the animals were humanely euthanized using cervical dislocation. Subsequently, the intestines were carefully removed without stretching and placed lengthwise on moist filter paper. For each animal, the length of the intestine, measured from the pyloric sphincter to the cecum, was recorded. Additionally, the distance traveled by the charcoal meal, expressed as a percentage of the total intestine length, was evaluated. Group means were calculated and compared, and the results were expressed as the percentage of inhibition (11-50).

2.7 Statistical Analysis

All the experimental results were expressed as mean± S.E.M. Data were analyzed by analysis of variance (ANOVA) followed by Dunnett's test.

3.0 Result and Discussion

The preliminary phytochemical screening of the ethanolic extract of Capparis zeylanica (ECZ) revealed a rich diversity of bioactive compounds, including alkaloids, flavonoids, carbohydrates, glycosides, tannins, terpenoids, and phenols. Notably, the absence of fixed oils and steroids suggests a distinct phytochemical profile for ECZ, consistent with its traditional medicinal use. These phytochemicals are known to possess various biological activities and may contribute to the observed antidiarrheal effects (12, 13). An essential aspect of evaluating the safety of any potential therapeutic agent is the determination of its toxicity. In this study, the median lethal dose (LD50) of ECZ was found to be greater than 2000 mg/kg body weight. This finding suggests that ECZ possesses a relatively low acute toxicity profile, providing a safety margin for potential therapeutic use (14). Castor oil-induced diarrhea is primarily attributed to ricinolic acid, an active metabolite that stimulates peristaltic activity in the small intestine, leading to changes in electrolyte permeability and the release of endogenous prostaglandins (15). The higher dose of

ethanol extract of C. zeylanica demonstrated significant dose-dependent antidiarrheal activity in this study, akin to the standard drug loperamide (2 mg/kg). Several mechanisms could underlie ECZ's antidiarrheal effects. The presence of tannins, sterols, triterpenes, and reducing sugars in ECZ may contribute to its antidiarrheal mechanism of action. Tannins, for instance, have been associated with reducing intestinal secretion, potentially by forming protein tannates that enhance mucosal resistance (16). ECZ may influence intestinal motility, as evidenced by a decrease in intestinal transit observed in the charcoal meal test. A reduction in motility could promote the reabsorption of water and electrolytes from the gastrointestinal tract, contributing to its antidiarrheal efficacy. Loperamide, a standard antidiarrheal drug, is known to regulate gastrointestinal function and slow down transit in the small intestine, which aligns with its observed antidiarrheal effect in this study (17-19). The administration of ECZ at varying doses (100, 200, and 400 mg/kg) resulted in significant protection against diarrhea, with the highest dose (400 mg/kg) demonstrating the most substantial effect. These findings underscore the dose-dependent nature of ECZ's antidiarrheal activity and highlight its potential as a therapeutic agent for managing diarrhea. The observation that ECZ reduced small intestine transit, as indicated by the mean distance traveled by charcoal, suggests that it may enhance the absorption of water and electrolytes from the gastrointestinal tract. Notably, the effect at 400 mg/kg was comparable to that of the standard drug atropine sulfate, a known regulator of intestinal motility. In conclusion, this study provides compelling evidence of the pharmacologically active substances within *Capparis zeylanica* responsible for its antidiarrheal properties

Table 1: Effect of ECZ on castor oil-induced diarrhea

Treatment (Oral)	Dose	Weight of stool	% Protection
Control	2 ml/kg	1.178±0.442*	-
Standard	2 mg/kg	0.289±0.274**	77.34
ECZ	100 mg/kg	0.498±0.0254**	55.83
ECZ	200 mg/kg	0.312±0.0124**	68.12
ECZ	400 mg/kg	0.411±0.0244**	71.23

**P<0.01 and *P<0.05 statistically (Mean±Sem) significant from control group.

Table 2: Effect of ECZ on small intestinal transit method

Treatment (Oral)	Dose	Mean distance travelled by charcoal as % total length of small intestine (cm)	% Reduction
Control	2 ml/kg	85.24±1.872	-
Standard	0.1 mg/kg	14.267±2.454	80.45
ECZ	100 mg/kg	38.57±1.254	51.63
ECZ	200 mg/kg	32.485±1.012	63.21
ECZ	400 mg/kg	22.512±1.134	74.08

**P<0.01 and *P<0.05 statistically (Mean±Sem) significant from control group.

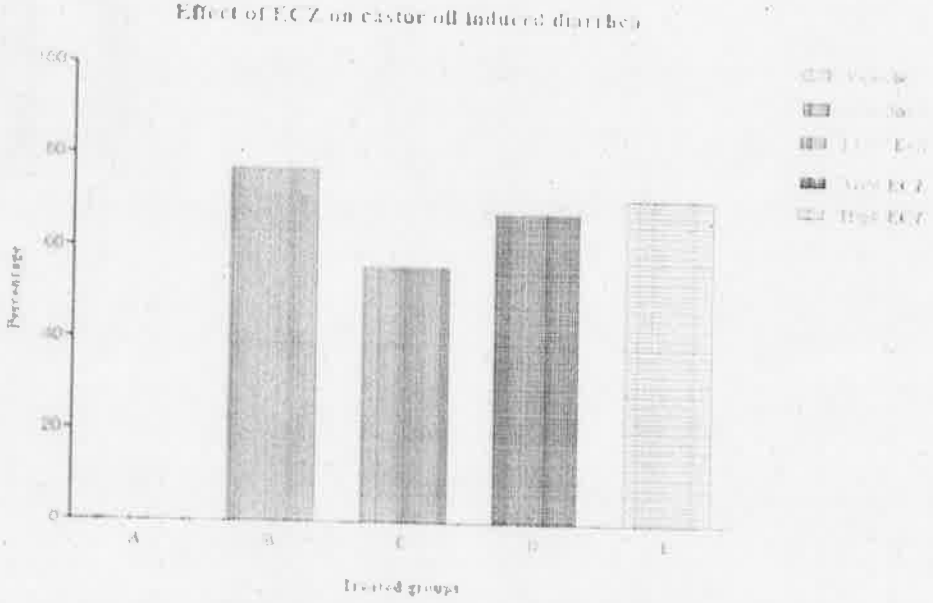


Fig 01: Effect of ECZ on castor oil induced diarrhea

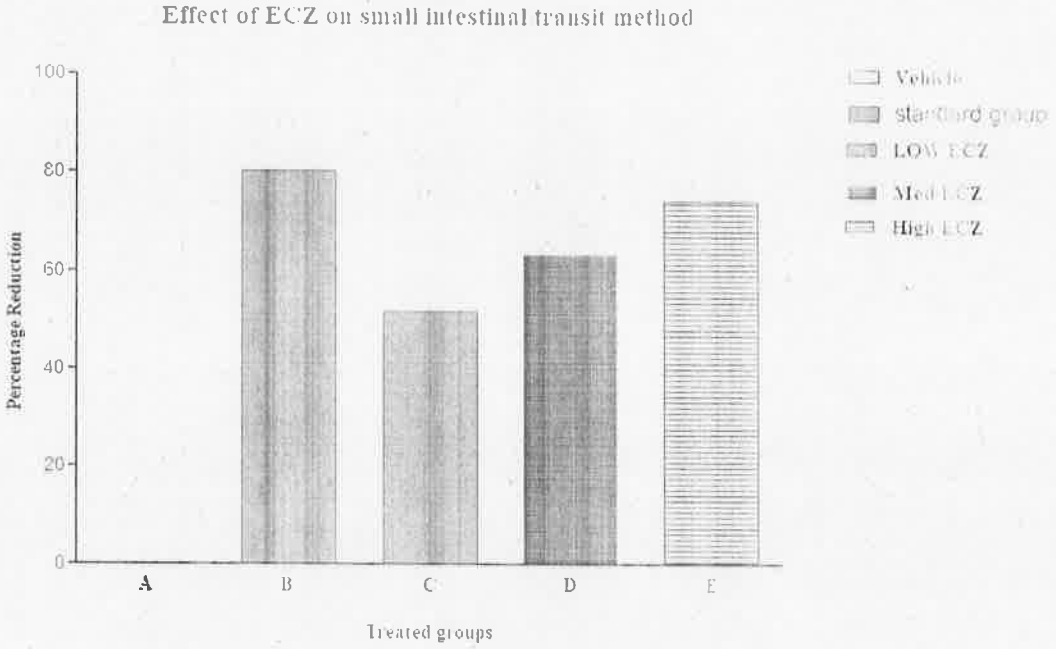


Fig 02: Effect of ECZ on small intestine transit method

4.0 Conclusion: These findings support its traditional use as an effective antidiarrheal remedy. Further research is warranted to isolate and characterize the specific molecules responsible for ECZ's antidiarrheal activity, potentially paving the way for the development of novel therapeutic agents for diarrheal conditions.

5.0 Source of Support: Nil

6.0 Conflict of Interest: Nil.

7.0 References

1. World Health Organization (WHO). (2002). Traditional Medicine Strategy 2002-2005. https://www.who.int/medicines/publications/traditionalpolicy/en/
2. Izzo, A. A., & Borrelli, F. (2009). The plant kingdom as a source of anti-ulcer remedies. Phytotherapy Research, 23(6), 797-799.
3. Rahman, M. A., Imran, T. B., Islam, S., & Islam, R. (2012). A review on ethnopharmacological applications, pharmacological activities, and bioactive compounds of mangrove plants, Capparis zeylanica L., and Nypa fruticans Wurmb. Evidence-Based Complementary and Alternative Medicine, 2012.

4. Gomaa, E. Z., Abdel-Lateff, A., & Alarif, W. M. (2013). New steroidal compounds from Capparis zeylanica. Natural Product Research, 27(3), 258-266.
5. Sibanda, S., Chigwada, G., Poole, M., & Gwebu, E. T. (2016). Antidiarrhoeal activity of Capparis zeylanica L. roots extracts in rats. African Journal of Traditional, Complementary, and Alternative Medicines, 13(5), 151-157.
6. Nibret, E., Wink, M., & Volker, H. (2010). Antiparasitic activity of plants used in traditional medicine in Ethiopia against gastrointestinal helminths. Journal of Ethnopharmacology, 123(3), 457-464.
7. Di Carlo, G., Autore, G., Izzo, A. A., Maiolino, P., Mascolo, N., Viola, P., & Diurno, M. V. (1993). Inhibition of intestinal motility and secretion by flavonoids in mice and rats: structure-activity relationships. Journal of Pharmacy and Pharmacology, 45(12), 1054-1059.
8. OECD. (2008). OECD Guidelines for the Testing of Chemicals, No. 425: Acute Oral Toxicity - Up-and-Down Procedure. Organisation for Economic Co-operation and Development.
9. Iwao I, Terada Y. On the mechanism of diarrhoea due to castor oil. *Jpn J Pharmacol.* 1962;12:137–42.
10. 21. Vogel HG. *Drug discovery and evaluation-pharmacological assays* 2nd ed. New York: Springer; 2002. pp. 875–6.
11. Rao CV, Vijayakumar M, Sairam K, Kumar V. Antidiarrhoeal activity of the standardised extract of Cinnamomum tamala in experimental rats. *J Nat Med.* 2008;62:396–402.
12. Parekh, J., & Chanda, S. (2007). In vitro antimicrobial activity and phytochemical analysis of some Indian medicinal plants. Turkish Journal of Biology, 31(1), 53-58.
13. Cowan, M. M. (1999). Plant products as antimicrobial agents. Clinical Microbiology Reviews, 12(4), 564-582.
14. OECD. (2001). OECD Guidelines for the Testing of Chemicals, No. 423: Acute Oral Toxicity - Acute Toxic Class Method. Organisation for Economic Co-operation and Development.